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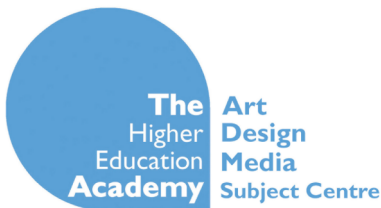
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Distributed e-learning in Art, Design, Media: an investigation into current practice

Research commissioned by the Art Design Media Subject Centre – Higher Education Academy (ADM-HEA)

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1. Executive summary

Context of the Research

This report describes the outcomes of a national inquiry into distributed e-learning in Art, Design and Media higher education. The research aimed to provide a picture of the current use of virtual learning environments and other learning and teaching technologies in these subject areas. The findings of the project were reviewed in the light of current literature, and the report provides development-oriented advice that aims to benefit stakeholders in these specialist subject areas.

Findings

Three kinds of findings contributed to the project. Detailed survey evidence describes current and extensive use of learning technologies and levels of user satisfaction; case studies provide in-depth accounts of practical and pedagogical issues involved in introducing e-learning into course programmes; and focus group findings give rich, qualitative accounts of real-life learning and teaching, including the student experience. The project's evidence provides a picture of the diverse and innovative use currently being made of e-learning across art, design and media disciplines.

Conclusions and recommendations

These relate to three main themes:

Change potential: e-learning has the potential to change key processes, understandings and activities associated with art, design and media disciplines. This may lead to new definitions of intelligent practice and to the loss of traditional areas of competence. One issue of concern is the potential for the downgrading of the kind of learning that comes through making and an alteration of focus from 'process' to 'product'. However, new ways of deploying specialist capabilities are emerging, and we are beginning to identify the new sets of skills that are required.

Specialist needs and opportunities: many traditional art, design and media activities are now being pursued in a digital forum; however, the 'matching' of new technologies to subject-specific needs is uneven, with some disciplines better served than others and further development required. Core learning technologies are increasingly integrated into established teaching areas, although at times technological incompatibilities still provide barriers to e-learning. Contact with professional contexts is a key use of ICT, improving student employability.

Training and professional development of staff: institutions need to define the professional competences that staff supporting e-learning should aim to meet. These should cover both ICT 'training' and more complex learning issues, and there is a role for national organizations such as the Higher Education Academy (HEA) to contribute to a coherent set of principles for e-pedagogy. Linking e-learning to strategic institutional aims and structures appears to provide more equitable access to appropriate training and core technologies for staff. It will be particularly important to include part-time staff in these opportunities as they are a significant, and sometimes neglected, part of the sector workforce.

2. Introduction to the research context and review of relevant literature

Context

The project was commissioned by the Higher Education Academy Subject Centre for Art, Design and Media, and involved a national inquiry into distributed e-learning. For the purposes of the project and in this report a simple definition of e-learning was adopted, that is -

‘Learning facilitated and supported by the use of information and communications technology.’ (JISC, 2004, *Effective Practice with e-Learning*).

This definition supports the point made elsewhere that “e-Learning is fundamentally about learning and not about technology. Strategic development of e-learning should be based on the needs and demands of learners and the quality of their educational experience.” (Joint SFEFC/SHEFC e-Learning Group, 2003); this focus on the learning experience was a key value in the research.

The project was intended to contribute to the identification of good practice in the development and use of virtual learning environments (VLE’s) and in the use of learning and teaching technologies in art, design and media. Although the approach was one committed to allowing the views, values and meanings of respondents to emerge in the course of the inquiry, it had some broad outcomes in mind. The specific aims of the project were to:

- enhance the learning experience in art, design and media through an investigation of the potential of new technologies
- consider the ways in which IT allows for enhancement of the spaces in which learning occurs
- investigate the development of virtual learning environments and the potential offered by digital formats for interactive and distributed learning activities
- provide development-oriented advice based on research findings that can benefit all stakeholders in the subject areas of art, design, media, history of art and history of design in higher education

As this report indicates, most of these aims have been met at least in some degree.

The research rationale was based on a perspective that is relatively new in education; this involves the idea of ‘distributed learning’, or that knowledge is ‘distributed’ and shared across contexts, tools, persons and resources. It is very different from more traditional views that see knowledge as existing in isolation and out of context (e.g. in someone’s ‘head’, or formally written down in a book). In other words, it involves ideas about learning that have been called ‘social’ and ‘situated’, so thinking about knowledge as constructed ‘in situ’ is the best way of considering this idea. This perspective on learning is a good match for practice-oriented areas like art, design and media which have a long tradition of creating knowledge and learning ‘in situ’, for example in hands-on situations in workshops and studios. In the contemporary context there is the potential of new technologies to expand the resources, tools and environments (or ‘situations’) in and through which learning occurs. The interactions between learners and new technologies are significant in this regard, as are the relationships built within e-learning contexts – for example, between learners and their tools and between members of similar or diverse learning communities. The potential for faster circulation of information through communication technologies is another feature of our distributed knowledge environment, bringing its own advantages and disadvantages.

It had been anticipated prior to undertaking the research that data would be forthcoming on the spatial and physical rearrangements taking place in teaching areas such as these to accommodate new, technology-assisted ways of working. In practice, this did not emerge as a major theme for respondents and they tended to discuss it only in passing; reporting on this aspect is therefore subsumed within the document rather than emerging as a significant sub-theme. Overall, though, there was plenty of evidence on the potential of e-learning to change existing practices; it was also

clear that the process of transferring learning activities to digital forums could offer particular challenges to this sector.

Insights from the literature

Theories of learning and knowledge that are in themselves complex tend to be even more demanding when we attempt to consider their relevance to the field of e-learning or technology assisted learning. Discussions in the available literature help to clarify some of the issues that we need to bear in mind and although extensive literature reviewing will not be attempted here, it is worth mentioning some texts that provided insights of relevance. These will be considered under five headings:

- Theories and models of learning and ICT
- Collaboration
- Teachers and Learners: views, needs and attitudes to e-learning
- The impact of ICT on specialist skills and processes
- Theories and models of learning and ICT

As yet, models of e-learning itself are still in development. However, some theorists have considered how technology can be used to enhance learning – for example, by achieving better learning outcomes, enabling more effective assessment and supporting efficient access to learning environments and resources. Mayes and de Freitas (2004) have conducted a valuable review of existing theories that offers a framework for understanding e-learning and attempts to map theory to pedagogical practice. A key aspect of pedagogy that they identify is the alignment principle in educational design, (Biggs, 1999), which they regard as crucial in securing coherent design for e-learning activities and approaches. This theory of ‘constructive alignment’ proposes consistency in the curriculum taught, the teaching methods used, the choice of learning environment and the assessment procedures adopted. This perspective promotes principled questioning of our underlying assumptions about learning, which in the contemporary context will include questioning and uncovering implicit assumptions about the role of technology. It will also include a critical focus on the ability of diverse technologies to aid learners in achieving specified learning outcomes.

In discussing ‘constructive alignment’ of learning and teaching activities, Mayes and de Freitas (op. cit.) note that the adoption of a theory of learning is central to good pedagogical design. They examine the main perspectives on learning derived from psychological theory, and consider how e-learning might be conceived of from these approaches. While most contemporary debates about learning centre on the differences between the *cognitive* and *situative* perspectives, another view – the *associationist/empiricist* – was extremely influential in earlier forms of computer training within organizations. The pedagogy derived from this, known as instructional systems design, is based on the learner undertaking tasks in sequences of increasing complexity so that the teaching of knowledge and skills is ‘from the bottom up’ (op. cit., p.8). This approach has been sidelined by the recent prevalence of constructivist thinking, but the authors point out that it is still influential –

‘Much of what is termed e-learning is still based in the training departments of organisations within a training philosophy that is traditional instructional design ...[which] consists of principles that are widely accepted within the organisational training culture.’ (op. cit., p. 14)

The *cognitive* perspective envisages learning as achieving understanding and has a strong focus on conceptual development. However, mainstream cognitive approaches to learning have increasingly emphasised *constructivist* assumptions that understanding is gained through activity, usually construed as ‘intellectual’ activity. This is partly a reaction to traditional didactic models of teaching, which have become discredited due to strong evidence that they do not produce the understandings that they seek to ‘transmit’ to learners. Nonetheless, a transmission-based didactic approach has persisted in many fields (although it has been less prevalent in art, design and media) because of the ‘... strong folk tradition that compelling explanations will lead to better learning.’ (ibid., p. 15). Mayes and de Freitas note that there is a crucial point here for e-learning,

which often tends to adopt an approach based on providing similar 'explanations' albeit in an enhanced, multimedia format -

'... the presentation of subject matter using multimedia is based on a discredited idea – that more vivid and naturalistic representations of knowledge would lead to better learning – a misconception responsible for much of the disillusionment that resulted from computer based learning in the 1980's and 90's' (ibid.)

This raises the problem of how to bring new knowledge to learners, and the research in this field indicates that it must be built on the foundations of already existing frameworks, though problem solving activity and feedback. Mayes and de Freitas describe how, in a constructivist view of learning, activities that build understanding have two main features. They comprise:

Interactions with material systems and concepts in the domain
Interactions in which learners discuss their developing understanding and competence

In terms of fulfilling these precepts, the characteristic pedagogies associated with many fields of art, design and media appear to provide a good match; what immediately comes to mind is both the materiality of studio/workshop practice and the specialist discourses in use in these subject communities (see Logan, 2007). Such attributes are not necessarily a 'given' of all art, design and media learning, but are likely to exist in domains which (whether practically or theoretically oriented) are predicated upon interactions with material cultures and their related conceptual frameworks.

Other constructivist ideas enable us to consider how e-learning works; for example, rather than giving us the individual learner as the unit of analysis, *activity* theory leads us to see learning as an activity system. It therefore involves consideration of the connections between participants and purpose, and the mediation of this by tools, which make activity possible. Tools can be both physical (networks, books, software) and cognitive (concepts, language memory) and they can both enable and constrain activity. In this perspective learning is 'distributed', with thought and intelligence being stretched across the larger structures of activity. Learners need support (or 'scaffolding') as they embark upon areas of activity in which they as yet lack competence. If web-based learning environments are in use, for example, tutors will need to be able to support students by their pedagogical use and monitoring of email, management of discussion forums and deployment of synchronous communication tools. The idea that e-learning will release teachers from responsibility for their students' learning is misconceived when considered from this perspective; the high resource demands involved in making pedagogically-informed arrangements for e-learning also need to be recognized.

The third approach to learning scrutinized by Mayes and de Freitas is the *situative* perspective. This characterizes learning as 'social practice' with an emphasis on the development of disciplinary practices of discourse and representation, collaborative learning outcomes and the development of learning relationships with peers. The writers bring out two aspects that are of particular relevance to the current research – the embedding of learning within the immediate social context of the educational setting *and* the opportunities that situated approaches acknowledge for learners to become participants in wider 'communities of practice.' In the vocationally-referenced areas that constitute much of the art, design and media sector both of these opportunities are significant, with learners centred on their course programmes but oriented towards professional destinations. It is therefore useful to hear of innovations with ICT informed by this approach, and Mayes and de Freitas describe some of these. They describe Goodyear's (2002) account of networked learning as involving knowledge-sharing and a phased learning cycle. The various phases of this cycle cover externalization (of tacit knowledge), sharing, discussion, refinement and then internalization of understanding, with online tasks designed to promote each aspect. Goodyear has also developed practical applications informed by both constructivist and situative principles; the CSALT networked learning model is an outcome with a strong focus on building the communities of practice that act as a powerful condition for learning (Goodyear, 2001).

Their review of the implications of these varied learning theories allows Mayes and de Freitas to conclude that most implementations of e-learning will include blended elements from all three approaches i.e. learning as behaviour, as the construction of knowledge and meaning and as social practice.

A review of constructivist approaches to conditions for learning is undertaken by Land and Hannafin (2000) in the light of new technological innovations. However they do not take a narrow theoretical view, and their main argument is that we give full consideration to the implications of all our ideas about learning in attempting to design learning environments. Although they are not only concerned with VLE's, their ideas obviously have implications for these. The key point made is that we need to find ways to align pedagogies, psychologies, technology and culture in designing learning environments, in a process of 'grounded design'(op. cit, p.3). The authors refer to the way that technological input 'can control the pace and chunking of information' (p.4), enabling more flexible approaches to learning. They conclude that in practice most pedagogical arrangements involve a blend of learning approaches, noting that constructivist learning environments also draw on theories of situated cognition. An element of the situated approach that they consider particularly useful is the aspiration for 'authentic contexts' for learning, which also supports constructivist tenets that privilege 'personal over canonical perspectives' on knowledge (op. cit, p 6). It is interesting that the writers' description of the main functions of technology in such environments appears to replicate an activity that has traditionally been central to art, design and media learning, that is –

'Technology enables learners to represent their thinking in concrete ways and to visualise and test the consequences of their reasoning' (op.cit., p. 15)

The same central concerns preoccupy Barab and Duffy (2000), whose work considers how best to import the ideas derived from situative theories into formal educational environments. This has always been problematic, as some of the most influential theorists in the field have formulated their ideas outside of formal educational settings (see Lave, 2000; Wenger, 1998), with which they sometimes seem to offer a poor fit. Barab and Duffy take up the situated theory relating to communities of practice and modify it for formal education into the concept of 'practice fields'. These are not the learners' destined communities of practice (such as television production, graphic design and so on in the context of art, design and media) but a learning environment in which they can 'rehearse' participation as they actively engage in domain-related practices. Leaving aside the theoretical problems that this might involve for committed situative theorists (and we are perhaps justified in doing this as there is rather more coherence in art, design and media higher education between practice communities and 'practice fields' as defined here than elsewhere; see Logan, 2006), this account provides details of one practical attempt to provide a technology-assisted learning environment replicating practice fields. This is the Special Multimedia Arenas for Refining Thinking (SMART) project, and a key feature is that it positions learners as community members rather than isolated participants. The lack of links to external professional communities within the programme is seen as a weakness of the project, but it makes some significant progress in designing technology assisted learning based on the principles of authentic activity and learner engagement in problem solving tasks.

The work of Laurillard (1993) on e-learning has been extremely influential in British higher education in recent years. Adopting a constructivist perspective, Laurillard considers how to reconfigure university teaching for a contemporary context of mass higher education, and how technologies can help us to maintain the best of current practices in this situation. She reflects on the role of technologies in assisting us to develop and maintain the 'conversational framework' with learners that can assure inclusion of essential aspects of learning, such as apprehending, exploring, discussing, experimenting, articulating (this is not Laurillard's full list). A great deal of this text involves precise discussion of the potential of different types of learning technologies, and directs university teachers towards the media that will foster specific learning outcomes that they may have in mind. In a situation of rapid change it is unsurprising that many have adopted Laurillard's precepts, especially as similarly thorough descriptions are provided of the infrastructure

needed to create dialogic learning environments in universities and turn them into 'learning organizations' (op. cit, p. 221).

Despite Laurillard's stated aim of aligning cognitive and situated standpoints on learning, there are some features of her approach that sit less well with situative views. For example her view of university learning as involving 'the process of abstraction' (p. 19) and her characterization of academic knowledge as decontextualized informs her approach to 'mediated learning' (p. 4), in which undergraduates do not learn about the world directly but about others' descriptions of the world. This mediation forms the substance of the dialogic relationship that contributes to the 'conversational framework' for learning, which thus becomes a 'second order' (p. 21) experience of the world. Laurillard's ideas on e-learning are better matched with some areas of art, design and media education than others; the second order experience involved in the 'conversational framework' challenges a key expectation in some practice-based activities that students' will enjoy extensive and personal 'first-order' engagement with learning, notably through making. However, both here and in fields such as media and cultural studies and art and design history, the analysis of descriptions and representations of the world made by others is a fundamental activity.

The examples cited by Laurillard are drawn from other fields, with no instances from art, design or media courses, which is unsurprising as empirical evidence on e-learning in general is still emergent rather than widely disseminated. However, Laurillard does say in discussing 'productive' IT media that such courses have always found creative channels through which to demonstrate learning, although it is unclear whether she regards these as 'products' of learning or means of learning. One significant conclusion that she draws is that –

'... improvements in university teaching are more likely to be achieved through 'multiple media' appropriately balanced for their pedagogic value, then through reliance on any one learning technology.' (op. cit., p. 174)

She thus argues for the introduction of 'balanced media' (p. 175) into higher education contexts, a precept that has been supported by recent recognition of the benefits of 'blended' learning.

• Collaboration

The potential of ICT to improve collaborative learning in design and technology education is considered by McCormick (2004), who reviews the current research to find out what has emerged on the ability of ICT to improve achievement in learning. This is a comprehensive international review with regard to design and technology education, so most of this section will be devoted to describing its results. McCormick begins by saying that evidence on the potential of ICT to make learning more effective is mixed in general, and almost entirely unproven in design and technology education. His view is that in order to realize the potential of ICT we need to pay more attention to learning issues, so he explores the available literature on a number of themes. The first relates to evidence on improved achievement, and here the problem of under-use of technologies is highlighted. The research that McCormick reviews is based on large scale studies in the USA, which highlight the lack of use of computers, even those in the classroom context. In design and technology education CAM (Computer Aided Manufacture) and CAD (Computer Aided Design) were found to be the most usual uses, other than general purpose use (i.e. non-design, but word processing, recording work via digital camera, internet searching and so on) There is little current evidence of ICT *extending* the capabilities of students, although there is recognition in the literature of its transformative potential; in particular electronic multimedia seem to hold the promise of both transforming the subject and the means of studying it.

The second area of research examines the professional design context, where the educational focus on the individual designer is not replicated in industry. The industry context is thus contributing to perceptual change, with the '... idea of collective generativity ... beginning to replace individual creativity.' (McCormick is quoting from Sandes, 2000, p. 11). The use of ICT in

creating collaborative environments is reported to be a major development in professional design. The higher education context is well covered in the research literature that describes what universities are doing to aid collaboration for students with design profession destinations, as this was a key focus for research from the 1990's. McCormick cites Wojtowics (1995); Maher, Simoff and Cicognani (2000); Turner and Cross (2000) and Garner (2001) amongst others and notes that there are also attempts being made to develop a good theory of collaborative design.

A third field of research that the literature describes is that of collaboration and learning, with different stances on this deriving from different views of learning. A (Piagetian) constructivist account would focus on individual knowledge construction, versus the joint creation of knowledge that would be privileged in social constructivist or situated accounts. McCormick highlights Rogoff's (1990) description of 'intersubjectivity' as a central concept in collaboration and her view of the three elements that create this - shared problem space, shared objects, shared or distributed cognition. Rogoff and others (see Maher et al. op. cit) perceive that what emerges is more than the sum of the thinking of those involved. Drawing on situated approaches, this field also emphasises the cultural authenticity of learning, the tools and physical conditions involved and the effect on thinking of the structures provided by tools. The significance of appropriate introduction of ICT is emphasized when we recognize that tools, including software, will frame the way a subject considers the design space; when this incorporates a collaborative element it is likely that it will add another dimension to student thinking. The processes involved in learning will also be significant, whether individually or socially oriented, and there are implications for assessment - '... measuring individual learning is somewhat problematic in the collaborative context.' (McCormick, ibid., p.165). Where collaboration is sought there will be the need for the task to enable or even require collaborative activity, and McCormick notes that tasks are often cooperative without being collaborative; true collaboration requires shared thinking, and there must be negotiation at the interface between parts of the task for collaboration to be involved.

McCormick points in conclusion to several issues that we need to recognize if we are to realize the potential of ICT. Firstly, it is clear that in some cases ICT adds very little to learning; it is also clear that we don't yet have pedagogic techniques for the new situations that collaborative technologies offer us, and that our network technologies are still not sufficiently easy to use and robust enough to guarantee smooth-running lessons enough of the time. We also need to consider how to make pedagogic interventions without intruding into the tasks of designing and making, and how to assess joint work in a system traditionally favouring individual assessment. Teachers also need to be flexible and be prepared to meet new challenges; for example, university students in one study (Garner and Hodgson, 2002) found video conferencing ineffective for joint designing, but were happy to use mobile phones to supplement meetings, individual CAD working and file sharing.

A different kind of collaboration is explored in Salomon, Perkins and Globerson's (1991) paper on the potential of ICT and human subjects to become 'partners in cognition' in 'mind-machine collaborations'. This discussion describes the way in which computer tools have the potential to extend the user's intellectual performance, but it depends on not only *what* students are interacting with but also *how* they do it. The paper's conclusions rest on a view of knowledge as distributed, and the authors note that the idea of mind-machine partnerships challenges our traditional notions about human ability, which we usually regard as a property of the individual and their mind. However,

'... once we couple intelligent technologies with a person's ability, the emphasis might shift to examining the performance of the joint system ... the system, not the individual alone, carries out the intellectual task.' (op. cit. p. 5)

This problem of determining what humans gain from such interactions is resolved to some degree by focusing on the achievements or 'cognitive residue' (ibid.) that accrues from the activity, which could be seen as similar in outcome to a learner engaging in activity with a more capable peer. However, the authors note that if positive effects are possible so may negative ones be. These could include 'deskilling', which could result from working with intelligent tools that render previously valued skills redundant -

'In our eagerness to produce ever more intelligent tools, we might inadvertently deskill skills we would want to retain.' (op. cit., p. 7)

There is, however, an inevitability to this, for 'If you have a technology ... you are likely to use it.' (ibid.). Moreover, new technologies redefine old activities and new ones emerge that give new roles to the human intellect. The paper therefore predicts that the impact of ICT on education will be profound, changing its whole culture. However, it is argued that it is not the technology alone that has the potential to affect minds, but a combination of '... technology, activity, goal, setting, teacher's role, culture – exerting their combined effect.' The paper concludes that the benefits that technologies may provide to human thinking will only emerge through their purposive use, by being cultivated –

'... through the appropriate design of technologies and their cultural surrounds.' (op. cit., p. 8)

- and warns that we may need to rethink what we mean by human intelligence in the future.

- **Teachers views, needs and attitudes to e-learning**

It had been hoped to include research literature reflecting the views of learners in this section, but it proved difficult to access empirically based research on this issue; only one article was found and it was based in a cultural context that appeared to be so removed from the British one that it shed little light on the concerns of this project. The research sources drawn on here will therefore clarify what we know about the views of e-learning held by teachers. Shaw, R. et al. (2002), address the ways in which staff development can take account of the specialist context and traditions of learning and teaching in art, design and related disciplines – 'The thrust of the tradition is to celebrate individuality and creativity with a considerable emphasis on practice-based learning' (p. 1) and overcome obstacles to ICT for lecturer use. The authors use empirical evidence from a survey of tutors in Scottish art schools to back up their points, and are able to provide pragmatic recommendations based on the findings. They argue that the distinctiveness of the domain involves a number of factors militating against ready acceptance and use of technology, including –

- tutors' overall unease about the role of computers in art, design and related fields
- the employment of large numbers of part time staff
- lack of computers in studios and workplaces
- historic underinvestment in technologies such as data projectors in seminar and lecture rooms
- absence of an appropriate, co-ordinated and intensive programme of staff development

The paper also lays down a number of principles for staff development in relation to ICT use for the subject context. For example, it is recommended that staff development programmes focus on: peer coaching, which makes learning more relevant to the environment in which individuals operate; modelling, enabling lecturers to observe expert performance; providing reward and recognition for successful adoption of best practice; sustaining staff development through ongoing and systematic training; highlighting the needs of Mac users, which are often neglected; linking of technology and educational objectives; introducing flexible schedules to enable staff to practise what they have learned. The paper also makes recommendations for changes in institute infrastructures that are needed to support the above – e.g. personal/sole use of computer for each staff member, appropriate equipment for lecture theatres, seminar rooms and studios etc.

Wood (2004) draws on data from two national qualitative studies, involving over 200 art & design teachers in schools. Nearly all of the teachers complained about lack of resourcing for their subjects; they also noted that other areas were privileged in this respect, despite their own needs being more specialized and more expensive than those of 'academic' subjects. For example all used professional design software as they couldn't find much software targeted to students, and they often found that site licences were unavailable and products very expensive. They also complained about lack of training, especially as 'technology is redefining art itself – its themes,

tools and vocabulary ... changing the subject of art, not just the way it can be taught or learned ...' (p.180) as well as 'displacing time-honoured skills' (ibid.). Significant changes that they had noted included their perception that draughtsmanship is on the decline, that the emphasis on collaborative classroom work means an art student's personal vision may count for less and that students seem to have an altered sense of what they observe – that the act of observation itself appears to be changing. The latter point is elaborated in the paper's discussion of the way that students are saturated with 'mediated' imagery, while teachers tend to prefer engagement with 'real' experience. An interesting point about potential cognitive and skills outcomes is made –

'... in art and design, the computer shifts the emphasis from the left hemisphere of the brain to the right – i.e. allowing more focus on the message, less on the execution.' (op. cit., p. 189)

- a situation which suggests that the mode of learning that operates *through* processes of making might be downgraded in these circumstances. In fact, the opinion is offered that the digital age 'rewards a different sort of student ...' and that our specialist disciplines will lose the 'human touch' that has always characterized them.

- **The impact of ICT on specialist skills and processes**

There is a growing body of literature that considers the impact of ICT on specialist art, design and media domains. Coyne et al. (2002) reflect the technological change of the last ten years in graphic design in their discussion of the impact of digital drawing, showing how design devices are sublimated in and act as catalysts for changing the practice, understanding and self-identity of designers. They consider the potential for new technologies to change relationships in the educational practicum and provide new signifying metaphors generated by the digital environment. The role of drawing in contemporary design curricula is reviewed by Schenk (2005), and she attempts to ascertain what forms of drawing ability are needed today and how this has been influenced by technological change. She derives evidence from interviews she conducted with academics (deans and programme leaders) and with senior design researchers, a high proportion of whom were from fine art backgrounds. Schenk found a substantive reduction in the importance attached to drawing now compared to the mid-1980s, but it was still considered important by two thirds of respondents in her study. The development of newer, art and design related disciplines was found to change the importance of drawing for application and entry to university courses. For applicants to interactive digital media design, product and industrial design programmes less drawing experience was deemed acceptable, with other disciplinary knowledge increasing in importance – for example, maths and computer studies. There also seemed to be more importance placed by academics on 'intellectual' over 'practical' skills, and a growing importance afforded to the business and computing aspects of the curriculum.

It was felt by Schenk's respondents that ICT can support the presentation of ideas for those with weak drawing skills; they recorded that they also felt the need to establish the educational criteria appropriate to the digital environment, as many said their attempts to ban the computer for the 'idea' stages of design had to be abandoned. They had reluctantly accepted that student designers need familiarity with use of computers throughout the whole process of design, despite continuing worries that software tended to over-influence the production of visuals and that it was too easy to produce outcomes in a technology-influenced 'house style'. An important point that emerged was that students now had little access to the kind of designers' drawings previously seen on industrial placements. There were two aspects to this, though, as students were spending less time on their own drawing as well as having less access to those of professionals. It was felt that this resulted in the limiting of conceptual freedom and that the modelling of 'process' was becoming more unavailable for students to learn from. Schenk notes that academics displayed a commitment to maintaining the place of drawing in design curricula, as well as specific tuition for the particular skills associated with professional practice, including tuition for 'industry norm' drawing software. She concludes by commenting on the need for a new canon of drawing that equates the roles of both traditional and digital methods; this has yet to be fully developed and integrated into the curricula of art and design courses, but the basis for an informed debate has commenced.

3. Research methods

The research was conducted between October 2005 and December 2006, with three phases of data collection involving the use of both quantitative and qualitative means. Different strategies were adopted in the three phases, with the diverse methods contributing characteristic forms of evidence; this was deliberate, as it was anticipated that it would enable triangulation of findings and contribute to establishing their validity.

The first stage of the study involved the design and implementation nationally of an electronic questionnaire which aimed to find out about existing practice in e-learning. The questionnaire was provided to all on the Subject Centre's existing database of practitioners in art, design and media education. A pilot phase was implemented in October 2005, with feedback from respondents enabling changes to be made that aided ease of response. The administration of the questionnaire was done electronically, but some respondents who contacted the research team were provided with paper copies to complete if they wished. In line with current legislation around data protection, implementation of the questionnaire was handled by subject centre staff rather than the research team; however, electronic responses came directly to the researchers involved. Approximately 1200 people on the database were provided with the questionnaire and a total of 249 responses were received, a good response rate that satisfied the needs of the study. Questions asked in this survey aimed to find out about demographic profiles of respondents; the range of technologies they were familiar with and used (including VLEs); the specialist applications that were most valued and current levels of daily ICT use. More specific questions relating to learning and teaching elicited information on knowledge management; views of learning and e-learning; how ICT was used to support learning and the learning environment. A fuller description of the survey questions will be found in Section 4.

The second phase of the research involved the sponsoring of major innovation projects in different higher education institutions. These involved in-depth case studies of a number of different learning activities and covered:

- Development and evaluation of a resource for online assessment in media production
- Development and evaluation of an online resource for learning in fashion and textiles
- A report outlining the impact of introducing specialist IT equipment into graphic design studio spaces
- An online contextual studies module for level 2 degree students, with a focus on the research skills needed to prepare them for dissertation work

The structured evaluation of these activities was conducted by those directly involved, guided by protocols and reporting mechanisms devised by the research team. Project leaders in the institutions involved were provided with a Guide to Case Study research (see Appendix 1) and they contributed structured proposals, conducted the research and provided full written reports to specified deadlines. Section 5 of this document provides edited summaries of the case studies, undertaken by the manager of the project who is the chief author of this report. A deliberate attempt was made to retain the different voices and perspectives of the individual case study authors; the views, opinions and values expressed are those of the individuals involved, testifying to the real-life nature of their experiences. It is intended that the collected case studies will be made available in full in a subsequent publication from the Subject Centre for Art, Design and Media.

The third phase of the research included a wider constituency of respondents, with seven higher education contexts involved in focus group research to examine the potential and benefits of e-learning. Focus groups were held between March and October 2006 and involved 47 participants across the seven institutions. Tutors, students, technicians and technician/lecturers took part, and it was particularly useful to secure the views of the twenty students who participated. A pre-planned route for focus group questions was adhered to, as recommended by methodology texts that consider the benefits and problems of this research method (Krueger, R.A & Casey, M. A., 2000; Morgan, D.L., 1997; Templeton, J. F., 1994). This 'route' was adapted to the informational

needs of the research; please see Appendix 2 for details of the protocols and methods that the research team established.

It was difficult to control the sample of respondents in this phase of the project; despite pre-planning, participants attended mainly on grounds of their availability on the day of the meeting. Although the groups differed in size and structure, the established 'questioning route' was adhered to by all three facilitators involved and it was felt that a good range of opinion was offered. Data collection was aided by audio recording the meetings, taking field notes and writing up summaries that included verbatim quotations from respondents. A wide variety of art, design and media disciplines were represented in the discussions and despite this diversity there was frequently a shared focus. Overall, it was felt that key concerns appeared to be replicated across the sites studied, providing triangulation of findings and enabling the data to be assembled under the headings offered in Section 6 of this report.

It has been estimated that, with the inclusion of the tutors and students who took part in the case study activities for the innovation projects, the total number of respondents participating in the research was approximately 500. A great deal of evidence was generated in the course of the project, and electronic archives were maintained by the research team. A number of meetings were held for team discussion of evidence and findings, and these 'data days' were found to be very helpful in establishing joint analytical strategies and for debating emerging meanings.

Analysis, results and outcomes

The data collected by the different means outlined above formed the project's research archive and their analysis forms the basis of this report. In the case of the four innovation projects, the project leaders provided their own evaluative comments as they reported on the activity. The statistical and other data collected by the online survey was analysed in two ways. Firstly, statistics and scaled responses were subjected to electronic analysis and the data displayed in the form of diagrams and charts; these are included in the report. Secondly, these data were reviewed to consider more general themes and issues in the light of the key research questions. The report's main author has therefore supplied discursive comment that attempts to capture these emergent themes. This comment accompanies the 'raw' results obtained by the survey, and where possible opportunities have also been taken to reflect on what some of the wider meanings of these may be.

Compromises, subjectivities and negotiations are a feature of all research activity. Here, for example, the data protection laws meant that it was not feasible to conduct more purposive sampling of survey respondents across the Subject Centre database. Similarly, it was difficult to pre-determine the constitution of focus group participants; the genders, roles and subject specialisms of those involved were very much dependent on who was available to turn up at the time. Nonetheless, the evidence itself has proved reassuring in surfacing some consistent issues and themes across all data sources and respondent groups. Where it presents an inconclusive and even confusing picture this has been noted by the report authors and explicitly commented upon; no attempt has been made to 'smooth over' such inconsistencies. Overall, the findings will aim to provide a broad and reliable overview of the current state of e-learning in art, design and media education. It is intended that findings and conclusions will subsequently be reported in a number of different formats that focus on areas of relevance to different audiences - for example students, teachers and educational managers. This report summarizes all the data collected in the project, and is aimed at those with strategic, pedagogic and specialist professional interests in art, design and media. We hope that it will be of assistance in developing strategies and policies that are evidence-based and that support and enhance e-learning in the sector.

4. Findings from survey research

The findings from the survey research are reported here under a number of broad themes; these relate to the questions asked and the information sought from respondents. Survey information offers itself to various modes of interpretation, and although some clarifying comment is included in each section it is anticipated that readers will often wish to draw their own conclusions from the collected data. The evidence provides a complex picture of interactions with technologies by sector respondents, directing us towards some clear conclusions and also raising many new questions. Some of the issues that require further clarification are illuminated to a degree by the evidence provided in both the case studies and focus group research, described later in this report.

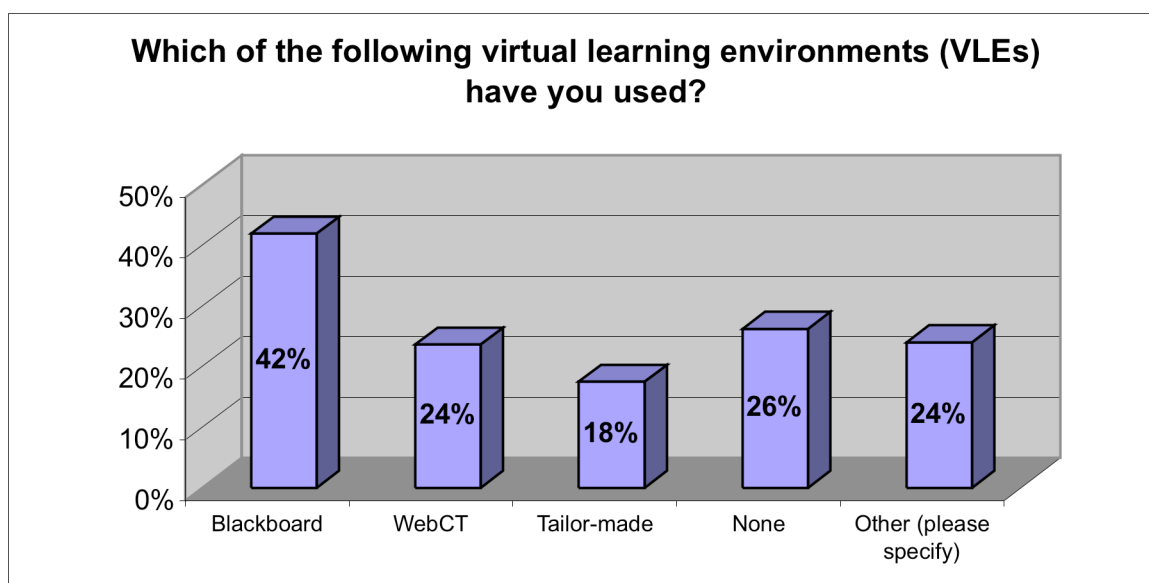
Questions 1 – 5 gave demographic information on survey respondents by:

- Place of work as specialist ADM institute or not
- Gender
- Age
- subject area
- job description

More respondents worked within institutions that they regarded as ‘specialist’ than otherwise (56% said they did, 44% said not). The majority worked as tutors/lecturers (55%) and the next largest group (19%) were educational managers. Gender and age profiles were obtained in case these proved relevant and may be drawn on further in the analysis.

Questions 6 & 7 were on VLE use:

Blackboard users were the largest group amongst respondents (42% have used this), with the next largest (26%) reporting no experience of a VLE; WebCT and ‘other’ types of VLE had each been used by 24% of respondents. It is important to note that 18% of respondents had experience of a ‘tailor-made’ VLE, the features of which we could not ascertain in the current survey. However, the main commercial providers (who have merged since this survey was conducted) clearly dominated the user experience of respondents, with Blackboard and WebCT having provided the forum for 66% of their prior experience of a VLE.



In terms of usefulness for supporting learning, Blackboard scored highly, with 69% thinking that it supported most/many learning activities well. 29% of respondents expressed the reservation that it ‘supported few learning activities well’, but only 2% found it ‘of little use’. It is interesting that, although similar levels of satisfaction with WebCT were recorded (68% found it supported

most/many learning activities well), a rather higher number of respondents (10%) found it 'of little use' to them. However, the most satisfied user group was that which had access to a 'tailor-made' VLE, 39% of whom could attest that it 'supported most learning activities well'; this highest satisfaction category was only selected by 14% of Blackboard users and 10% of WebCT users. However, we need to read this evidence circumspectly and bear in mind that 'tailor-made' users represented a numerically small group (36 out of a total of 241 survey respondents).

Respondents were also asked to provide more detail on any 'other' VLE, and the following were recorded as having been used:

Moodle
First Class (OU)
WOLF (Wolverhampton Online Learning Framework)
Lotus
Virtual Campus
NTU VLP
Studynet (University of Hertfordshire's MLE)

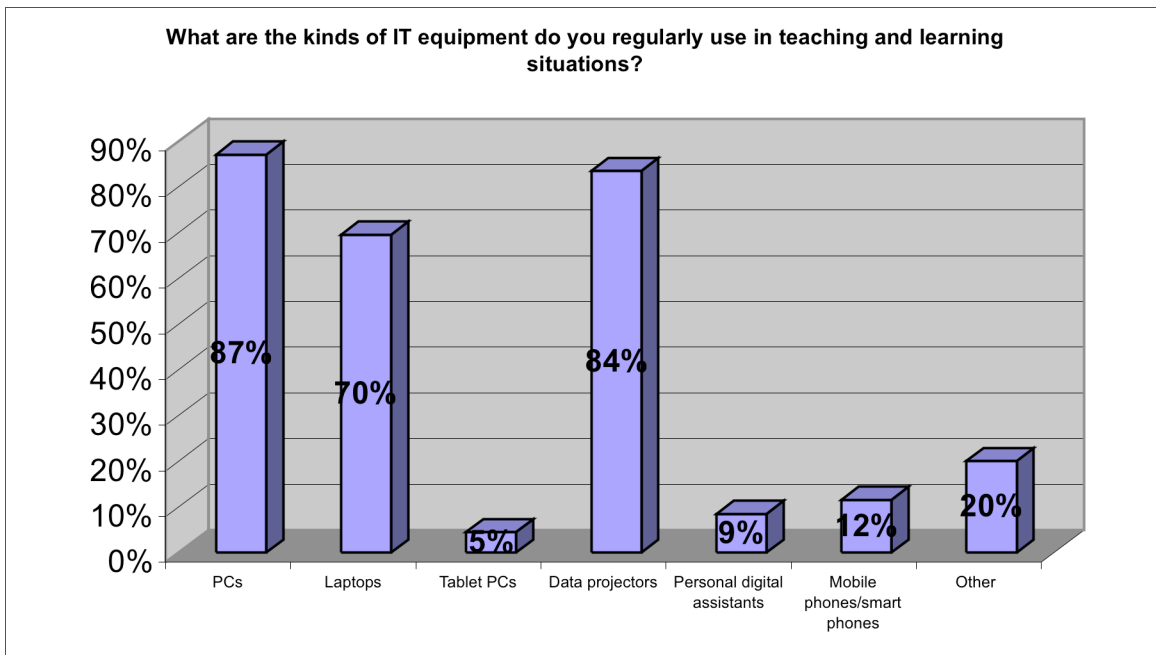
Of the above, 'Moodle' had most use, with 15 mentions; 5 respondents specified 'First Class', there were 4 recordings of 'WOLF', 3 of 'Lotus' and a couple each of 'Virtual Campus' and 'NTU's VLP', while one respondent mentioned 'Studynet'. More generic formats were also described, e.g. 'in-house intranet', 'email lists', 'created own blogs', 'personally designed website', 'university portal' etc.

Questions 8 & 9 asked for information about the kinds of IT equipment that respondents used regularly in learning and teaching situations, and in their everyday lives.

In response to question 8, respondents recorded that in learning and teaching contexts they made high levels of use of the following:

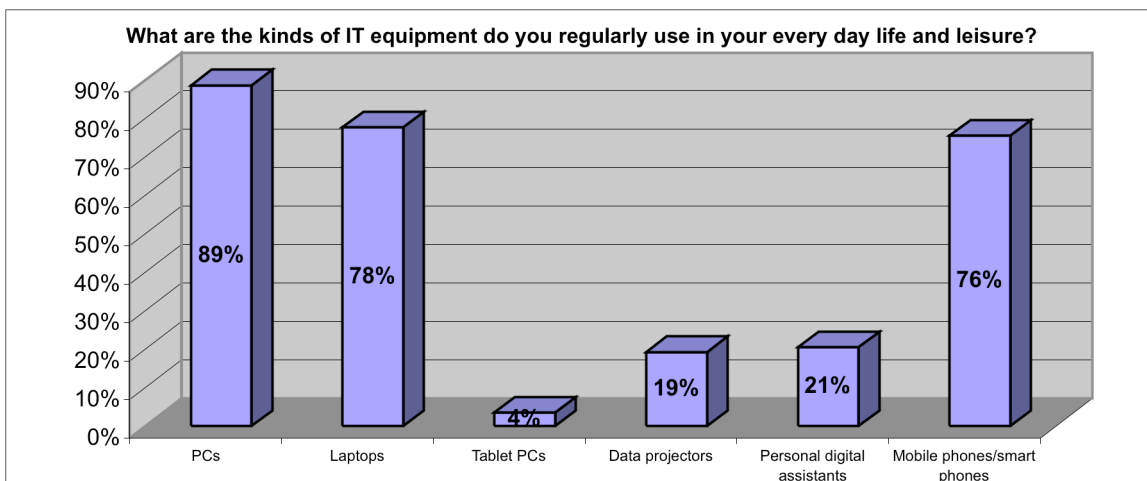
87% used PC's
84% used data projectors
70% laptop computers

20% of respondents (45 out of 241) replied 'other', however, and were asked to specify the nature of these tools. The most commonly recorded use under this category was of the Apple Mac computer, but respondents also noted their use of interactive whiteboards, digital visualizers, digital cameras and scanners and projectors (both digital and traditional OHP). In terms of mobile technologies only one respondent noted their use of 'interactive handsets' and one of iPods for learning and teaching purposes.



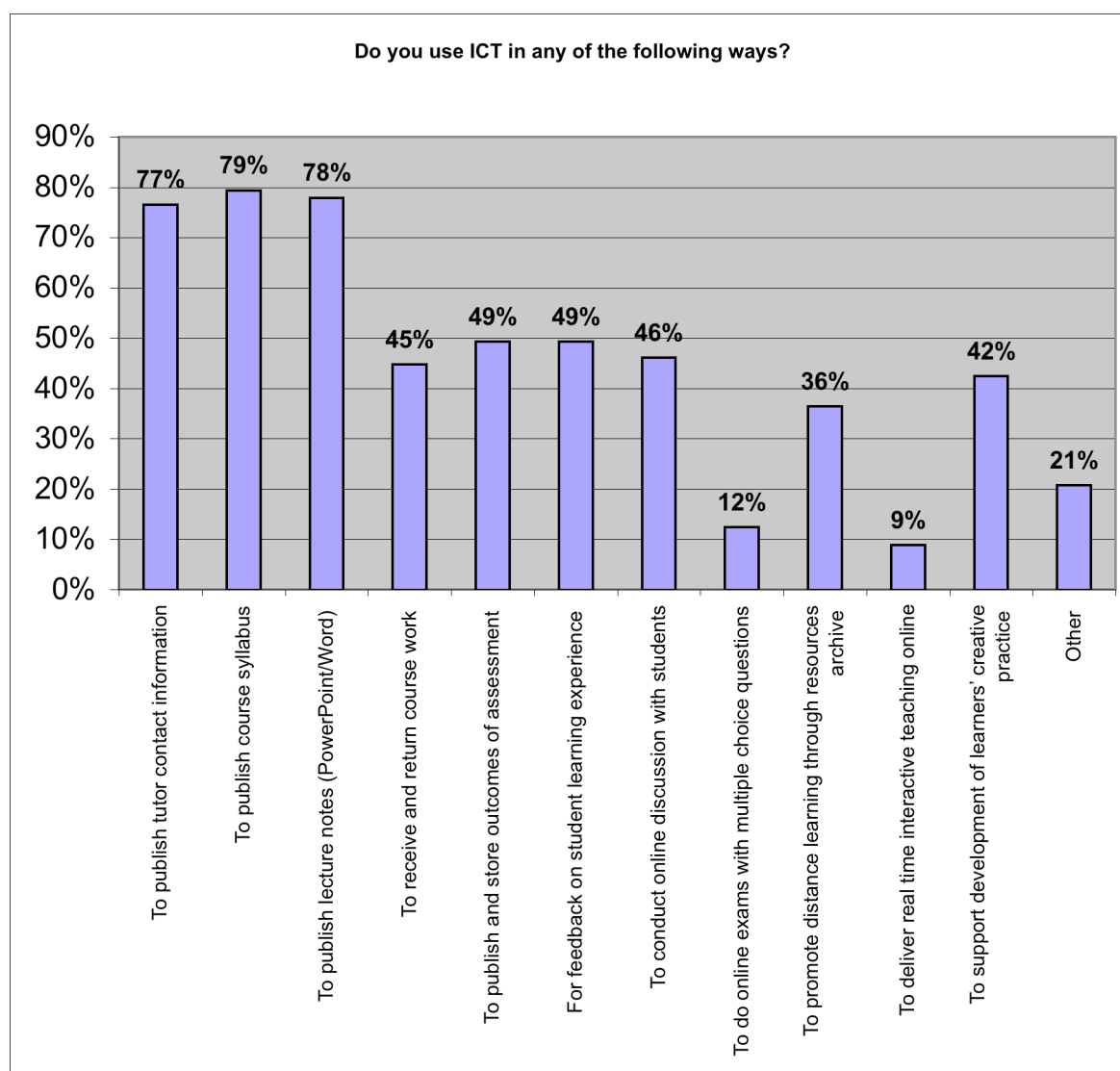
A number of technologies specified in the question about learning and teaching use attracted low response rates, with only 12% using mobile/smart phones for this purpose, 9% using PDA's (personal digital assistants) and 5% tablet PC's. A question was specifically asked about the tablet PC because of the potential of its applications in visual environments, and the widespread use of digital drawing tablets in some branches of the design industry; however, it is clear that this is yet to be more fully exploited in learning contexts.

Question 9 asked about more everyday and personal technology use, and some contrasts were evident, indicating the existence of a life/work divide. While slightly more use was made of PC's and laptops here (89% and 78% of respondents made 'life and leisure' use of these), far higher levels of use of mobile technologies were recorded - 76% of respondents used mobile/smart phones and 21% PDA's. The availability and high level of uptake of mobile technologies and respondents' familiarity of use with them is evident. Taken with responses to the previous question, however, the data suggest that at the time of the survey users were not yet considering the potential for integration of mobile technologies into learning and teaching contexts. This is unsurprising given the presentation and marketing of these technologies predominantly as domestic and personal appliances. Furthermore, in most higher education contexts the protocols for handling email communications between learners and tutors are only in the process of being established, and mobile technologies add a further complication to the picture.



Questions 10 & 11: use of ICT and specialist software

Question 10 invited respondents to indicate the ways in which they used ICT in learning and teaching. The most significant areas of use, involving large majorities of respondents, were related to publication of course syllabus material (79% of respondents used ICT for this) and lecture notes (78% of respondents); dissemination of tutor contact details (77%) was another significant feature of ICT use. This high take-up for dissemination and publication purposes was a clear sign that many of the communicative and administrative aspects of learning and teaching in art, design and media were being rendered quicker and easier by new technologies. It is notable, however, that on-screen, downloadable and printable text is the main medium of the interaction between learners and tutors – that is, word-based communication appears to be the focus of these interactions. This is probably the case across all disciplinary domains, but the subject-specific focus of this survey might have led us to expect a somewhat different picture to emerge. However, a sizeable minority of respondents (42%) also noted that they used ICT ‘to support development of learners’ creative practice’; the meaning of this is more difficult to unpack, and can only be considered in the context of the survey data overall. It was also found valuable to triangulate these meanings with the more detailed data derived in the qualitative research activities that formed part of the study, as recorded elsewhere in this report.



Activity was also reported in the area of assessment and feedback, with the publication and storage of assessment outcomes and provision of feedback on student learning both being assisted by ICT use for 49% of respondents. 45% also reported using ICT to receive and return course work. Only a small proportion of respondents (9%) reported that they ‘delivered real time

interactive teaching online', but asynchronous communication was used by a much larger group (46%) to 'conduct online discussion with students'.

As respondents were asked to indicate any 'other' activities involving ICT that they undertook, a wider picture emerged. 44 respondents took the opportunity to include accounts of such activities as:

Promotion of reflective discussion among learners via blogs, online discussion forums, journals and other encouragements to reflection

Dissemination of student work and ideas

Information management e.g. providing links to sources for information and research, websites etc.

Computer aided design

Administrative tasks including keeping registers and records, diary-updating, report-writing

There was only one instance of a respondent referring to 'the use of IT for learning object design' (the formal JISC/HEA description of the process of creating online teaching materials) as against the large numbers referring less self-consciously to the widespread activity of putting existing materials, such as lecture notes, online. Nonetheless, the wide range of activities reported as being undertaken by the respondent group indicates that it is not merely productive channels of communication but receptive and interactive ones that are currently being exploited through ICT use. The latter are probably those activities which respondents are referring to in noting that they use ICT to support learners' 'development of creative practice', and the diversity of them suggests that they would provide valuable support of the 'dialogic' kind that Laurillard (2002) prescribes. Nonetheless, not all art, design and media activity is optimally conducted in a verbal, 'conversational' (op.cit.) medium, which appears to be the most accessible mode available to respondents. It was significant that only one response specified the participant's current ICT use to involve delivery of 'workshops' as well as lectures 'online and asynchronously'.

The specialist software available for art, design and media applications adds a different dimension to the predominantly 'text-oriented' capability of more mainstream ICT solutions that are outlined above. However, it is largely derived from professional and industrial art, design and media contexts and we have to be circumspect in equating the use of specialist technologies, however relevant they may appear to disciplinary learning outcomes, with 'e-learning'. With this in mind, it will be useful to note the wide array of 'bespoke' art, design and media software available to support learning activities in higher education. Those applications reported in use by respondents in the survey included:

Adobe - Acrobat/Audition/Go Live/InDesign/Photoshop/Illustrator/Quark Xpress/Freehand

CAD embroidery

Course Genie

Dreamweaver

Flash

Fireworks

Final Cut Pro

iPhoto

Macromedia Authorware

Premiere

Microsoft Office

Microsoft Word

Microsoft Publisher

Microsoft Powerpoint

Pebblepad

Quicktime player

Rhino

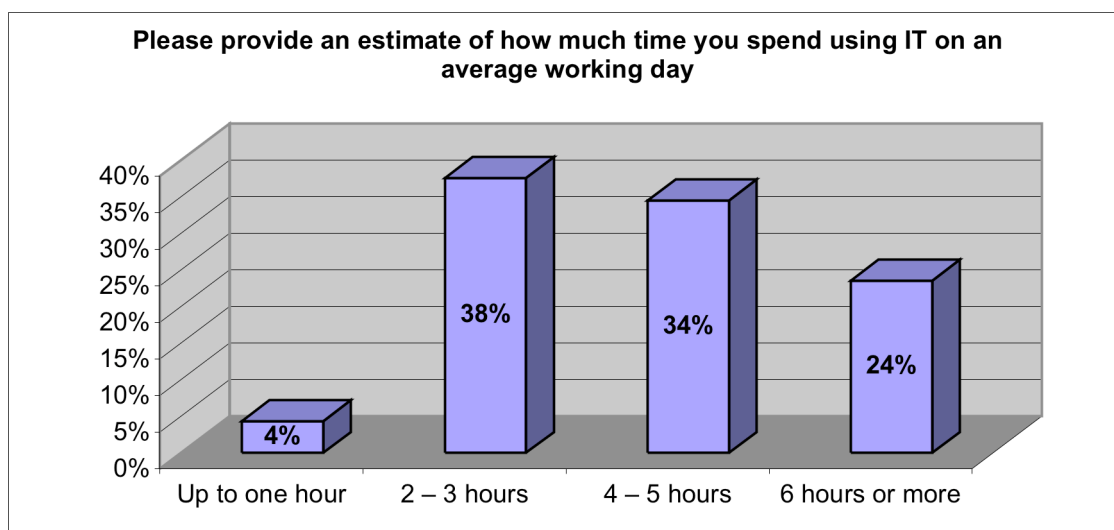
Scotweave

VectorWorks & Artlantis

XSI

Question 12: time spent using ICT in the working day

This question recorded the large amounts of time that respondents spent in using IT on an average working day, and it was notable that only 4% spent one hour or less in this activity. At the other end of the scale, 24% recorded spending six or more hours daily in tasks that involved IT.



The demographic of respondents is important in considering the data that this question elicited, and it is worth remembering that the sample included not only lecturers, educational managers, ICT managers and learning technologists but a large minority of respondents (21%*) with varied role profiles. These include responsibilities for academic guidance, learning development and student support. This context is important for considering the extremely high levels of time that respondents overall invested in ICT use; 38% reported two to three hours a day being spent in this way, while 34% recorded four to five hours. The daily pattern of working for those involved in art, design and media education is thus one of strong and continuing engagement with IT, with 96% of respondents investing substantial amounts of their working day in this activity. Specifically, 72% of respondents spend between two and five hours daily in this way, with another 24% recording six hours plus. The domination of the working landscape by IT-related activities appears to be a fait accompli, posing questions about the kinds of activities involved and their relationship to learning and teaching. It is clear that redefinitions of key educational activities have already occurred or are currently taking place, and this high investment of respondent time is an important signifier of the widespread nature of such developments.

* Many of the answers under this heading indicate that respondents took the opportunity to note the nature of their subject disciplines, which they clearly felt lay outside the narrower definitions of art, design and media. There were therefore many listings of related topics such as 'photography', 'art history', 'multimedia' and so on. It seems reasonable to assume that these respondents were in 'academic' or at least 'academic-related' roles, though this is not an assumption that has been adopted in the analysis without explicit comment being made upon it.

Question 13: Archiving and data storage

This question was regarded as important in considering the ways that respondents were managing and storing information, and was part of a larger consideration about knowledge management, reproduction and 'transmission' (Brown, Duguid et al.) This is a complex matter in art, design and media fields due to the nature of their disciplinary knowledge bases and the high level of practical activity involved. The understandings developed in art, design and media therefore tend to be a poor fit with more text-based forms of codified knowledge that exist in other subject areas, and which have traditionally been recorded in the written word. Against this background there is clearly the potential for more effective and accessible storage of a wider range of material through ICT use than has previously existed, with availability of text and visually based, multi-media, sound and

other forms of data. It is unsurprising, therefore, that respondents reported varied and widespread use of ICT-enabled forms of data storage. The most popular forms were saving on computer hard drive (98% of respondents), USB storage devices (78%) and CD ROMs (76%) - giving respondents a blend of non-portable and portable means. More minority uses included saving to websites/online briefcases (40%), the 'older' technology of floppy discs (29%) and upcoming mobile devices such as iPod and iRiver (25%). One of the issues raised by responses to this question relates to the rapidly changing software and hardware involved, and the importance of ensuring the continuing availability of information in 'extinct' ICT formats.

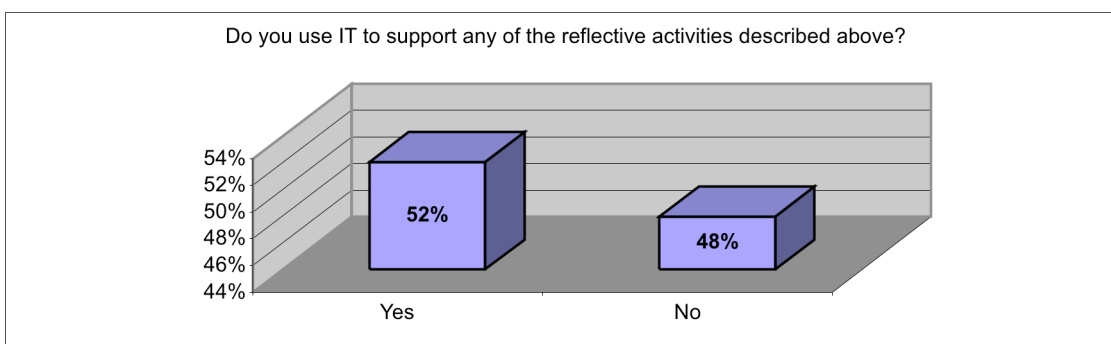
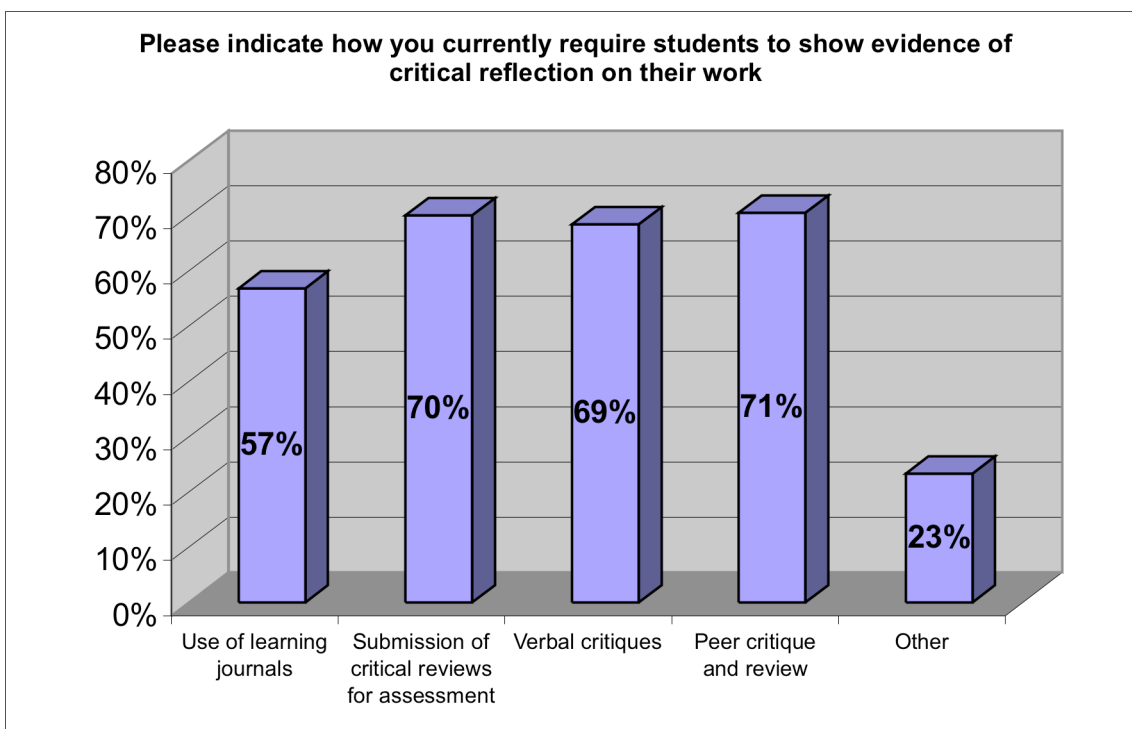
Question 14: the benefits and potential of e-learning

In order to gain data on respondents' perceptions about the value of e-learning they were asked to rank a number of recognized benefits in order of importance to them. The table is included for more detail, but some clear preferences emerged. The potential of e-learning to 'extend classroom resources and provide better access to information' was its most significant perceived benefit for the largest group of respondents, with 46% agreeing on the importance of this. Enhanced flexibility of the learning context was the next most significant aspect, with 32% agreeing on the benefits of learning taking place 'anytime, anywhere'. Of the categories offered, the 'support for group learning' offered by ICT was the next respondent preference, with 30% agreeing on its importance. The potential for 'reduction of paperwork' was in fourth place (29%), with joint fifth place shared between the perceived capability of ICT to 'make assessment quicker and easier' (25%) and its ability 'to attract people who do not participate in conventional learning' (25%).

Respondents were also offered the opportunity to record 'other' perceived benefits; amongst the most prevalent concerns here were: the support offered by ICT for student independence, self-management and 'ownership' of learning; enhancement of student employability through familiarity with ICT, including experience of 'industry-standard' equipment; improved responsiveness to student learning needs/styles enabled through ICT; ease of access to learning materials; facilitation of communication between learners/teachers and between learners.

Questions 15,16 & 17: ICT & support for critical reflection

The diverse range of activities coming under the category of 'art, design and media' higher education allowed few opportunities in the survey for eliciting data about specific learning and teaching activities. However, critical reflection is one area that most degree programmes in these fields attempt to support, and it is an important corollary to the practice that constitutes a key learning activity. Specific questions about how critical reflection was evidenced and about the role and uses of ICT in supporting this were therefore included. As might be expected, a high number of respondents reported that evidence of students' critical reflection on their work was sought; 71% secured evidence of students' critical reflection through engagement in peer critique and review, 70% asked for submission of critical reviews as part of the formal assessment process and 69% expected it to emerge in verbal critiques. Students' use of learning journals was a source of evidence for 57% of respondents, with 23% also using 'other' means. These included 'artist's statements', essays and class presentations, learning agreements, self-assessments and ongoing reflection about practice in sketchbooks. Visual arts practice and exhibitions of visual works were also regarded as evidencing critical reflection (presumably implicitly in the latter cases).



Respondents were also asked whether they used ICT to support student reflection, with 52% indicating that they did and 48% saying that they did not use ICT in this way. Those who responded positively to this question were asked to specify the means in use, and indicated that large and varied range of ICT-supported strategies were in place. Innovative modes of support included blogs; creation of online knowledge bases; use of ICT to facilitate 'continuous feedback'; e-portfolios and other means of conducting online PDP (Personal Development Planning); online forums; online research journals; keeping of production and research logs; online reflective accounts and discussion boards. The modes reported on were varied, with consensus on the usefulness of blogs and of some form of e-portfolios for PDP activities. There was clear evidence that respondents were using the digital environment to pursue traditional art, design and media activities in a new forum – for example by using 'online crits', 'digital portfolios', 'electronic presentations' of work for assessment and 'submission of online critical reviews'. Both individual self-reflection and shared reflective discussion with peers and tutors were referred to by respondents, with the latter facilitated by new communicative opportunities offered by ICT. It is important to remember that despite evidence of take-up of these extensive opportunities, almost half of respondents had yet to exploit them at the time of completing the survey.

Question 18: ICT and support for student learning

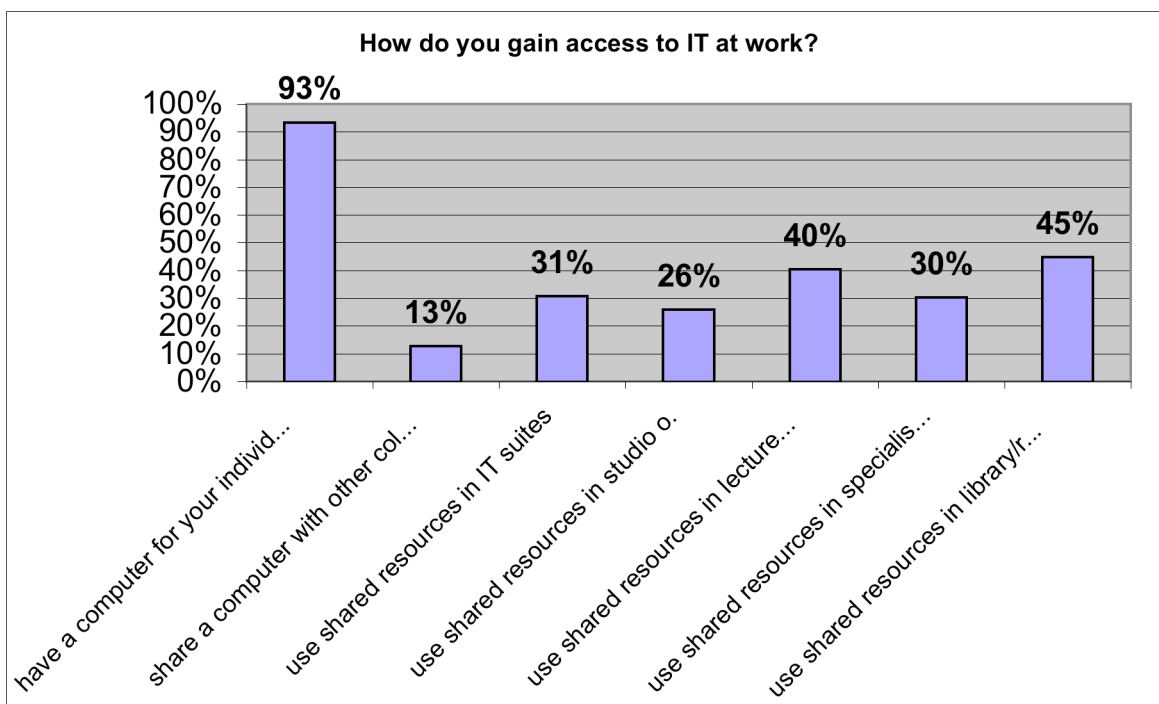
Respondents were asked to specify their preferred electronic tools for supporting student learning in art, design and media courses; a choice of eight of the better-known tools was provided for ranking, as well as an option to specify 'other' important ones. Respondents showed a clear preference for 'subject-related websites' (placed first choice by 30% of respondents) and for 'email'

(first choice of 23%). 'Electronic databases' were a clear second choice (21% of respondents), with third choice 'online reflective journals' (16%) although third choice scores were well distributed across all the options provided. 'Subject-related forums' that allowed a degree of interactivity in the form of questions and answers were placed fourth by 18% of respondents. Feedback both *to* students on assignment grading and *from* students on their perceptions of the learning experience garnered low ratings; feedback from students was placed in fifth and seventh place by 40% of respondents, while 'online feedback to students on assignments' was ranked sixth (18% of respondents). Little useful information about the least popular applications was available, with eighth place being shared inconclusively by a number of low-rated tools.

Questions 19 & 20: spaces, resources and the learning environment

These questions about the learning environment enabled links to be established between preferred spaces for learning and the technological access available in these spaces, illuminating the real-life conditions experienced by those participating in the survey. Respondents ranked the physical environments in which learning was promoted in order of perceived importance, with clear preferences emerging for 'studios' (ranked first by 52% of respondents) and 'workshops' (ranked second by 30%); 31% of respondents, however, gave first ranking to 'seminar and tutorial rooms'. At the bottom end of respondent preferences came 'staff offices', ranked eighth by 54% of them, and 'specialist technology areas' (seventh ranking by 29% of respondents). It is likely that the latter description was taken by respondents to refer to sites for specialist technology that were physically separated from 'dedicated' course studios, as similar perceptions of their unpopularity have been documented elsewhere (Logan, 2007).

Responses to the next question clarified that the vast majority of respondents (93%) had individual access to ICT via a desktop computer or laptop. However, far fewer (26%) were able to access shared ICT resources in studios or workshops – that is, they had little access to computers in those areas which were prized spaces for learning. Conversely, given the ubiquity of ICT in staff offices, it appears that the spaces that respondents regarded as least useful for learning by were those which were most highly technologised. Many of us will recognize this feature as something of a historical accident, as the bureaucratic and managerial support offered by ICT has been easier to import into HE environments than other, perhaps more complex, features with the potential to support learning more directly. Nonetheless, seminar and tutorial rooms were also valued learning spaces amongst survey respondents, and a greater proportion of respondents (40%) also reported that shared computer resources were available in these environments. It is worth noting before we leave this issue that respondents reported a large amount of daily time being spent in computer use (see responses to question 12 above), perhaps prompting consideration of the nature of these activities. If such computer use is predominantly focused on bureaucratic or managerial matters (and the office-based nature of it suggests it may be), then attention may be directed away from learning and teaching activities. Further research will be needed to ascertain if this assumption can be verified, but anecdotal evidence also suggests that many colleagues in academic roles find themselves increasingly responsible for administration and 'paperwork' and that computer use has not helped to lighten this workload.



Questions 21 & 22: Preferred approaches to learning and perceptions of technology

The final questions of the survey elicited respondents' views of learning, and of the role of technology in learning and teaching. Respondents ranked a number of learning approaches by preference, with 54% of them placing as first choice *either* 'traditional classroom/studio and workshop based teaching' (27% voted for this) *or* this 'traditional' mode 'supplemented by online lecture notes, contact information, course syllabus etc.' (27%). The 'publishing' potential of ICT referred to above (under responses to questions 10 & 11) was therefore seen as one of its most significant contributions to learning. However, 42% of respondents had an extended view of the potential of elearning, and ranked this as first in their preferred approaches; this sizeable minority showed preference for 'traditional' teaching enhanced by features such as online discussion forums, chatrooms, tools such as interactive whiteboards, online assignment submission and recorded lectures. A clear majority of respondents reacted negatively to the idea of doing away with face to face learning and teaching interactions, with 58% ranking 'fully virtual/digital delivery' the lowest of the options provided.

There was clearly a cautious but significant uptake of elearning among sector respondents, although most appeared keen to maintain more traditional methods of face to face teaching that were enhanced but not replaced by the potential of ICT.

5. Case study summaries and findings

Innovation Project One - 'Enhancing Textile Practice at London College of Fashion'

Project Leader: Polly Kenny

Introduction and context of the project

The background to the project lay in the changes promoted in university design courses by the influx into the sector of unprecedented numbers of students. Local challenges were presented to course teams at London College of Fashion by this situation and by a simultaneously experienced cut in teaching contact hours. The decrease in available teaching hours was a result of restructuring and the introduction of Foundation degrees. The course tutors involved were committed to supporting students by enabling them to develop independent learning strategies within a blended learning environment. In this they also protected the good practice for which they had been recognized by the awarding of funding for a Centre for Excellence in Teaching Learning (CETL) in the field of Creative Learning in Practice (CLIP).

Course tutor Polly Kenny had a number of broad aims in mind in developing a blended learning resource for her subject area of 'textiles for fashion'. These included:

- Coping with widening participation and attendant increases in student numbers and student diversity
- Bridging into study for learners for whom access provision, now no longer available, might have been the most appropriate route in the past
- Securing optimum learning opportunities against a background of shorter courses and decreased contact time
- Preserving the practical, tactile nature of textiles learning as well as the critical reflection that is integral to practice
- Securing textiles subject knowledge and guarding against dilution of this specialist resource

Methods employed

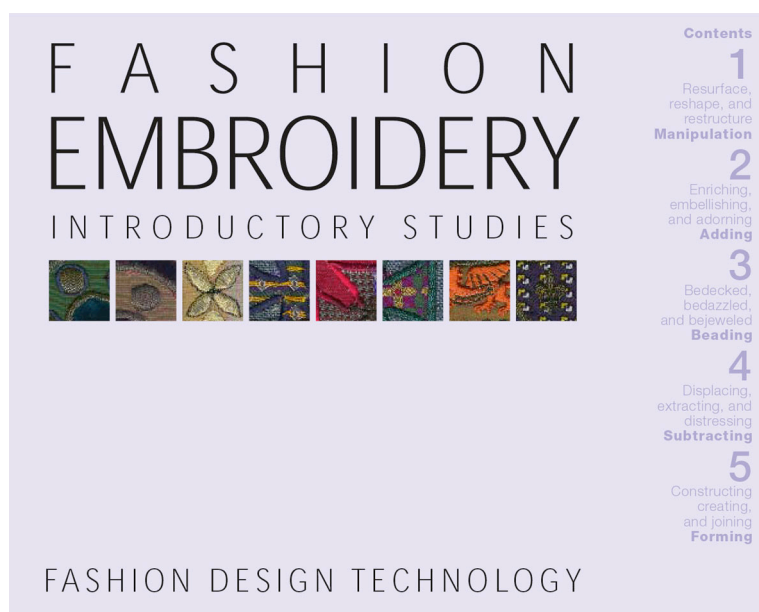
The course tutor, Polly Kenny, investigated a range of literature that offered insights into how she could develop experimental learning solutions using ICT (Draper, 1997; Davis, 1993; Rowntree, 1992; Laurillard, 1993; White, 1999). This enabled her to consider theories about how learning takes place, different learning styles that students might bring to their activities and the potential of open and distance learning. She was able to use these ideas to inform both the design and structure of an e-learning resource. In particular, Laurillard's ideas about a conversational model of learning were used to ensure that the design of the resource recognized significant characteristics of a positive model of learning and teaching; these included discursiveness, adaptivity, interactivity and reflectivity. The resource was piloted with existing students in the course of pre-planned learning activities in textile practice and evaluation undertaken in the course of the project.

Development of a blended learning resource

The resource was intended to provide students with selected examples that promote an aesthetically informed approach, presenting them with a body of knowledge that was both historical and contemporary, and suggesting innovative developments that could encourage creativity and diversity. The tutor regarded it as an example of a mediated learning resource, drawing on Rowntree's (1992) identification of the importance of a coherent structure in mediated learning plans, crucial in introducing the learner to the material in logical sequence. The structure reads sequentially but also promotes the idea of crossing over between techniques and between

historical and modern references and examples, thereby encouraging experimentation at an early stage. Through blended learning activities students can also create their own links to cultural studies and contextual theory.

The structure of the resource was on four levels: core knowledge, exemplars, constraining factors and supporting materials. The core knowledge allowed the student to gain knowledge of the principals of fashion embroidery design and the fundamentals of the techniques and processes involved. Exemplars, both contemporary and historic, developed understanding of the principals of design and encouraged the student to put knowledge into practice. Consideration of the constraints on the use of fashion embroidery developed an understanding of economic and technological factors, suitability to purpose and the aesthetic affect of the design in context. The supporting material provided information to help more in depth study and individual focus.



Home page showing the 5 sections of the resource

The resource consisted of five sections, Manipulating, Adding, Subtracting, Constructing and Embellishing. These are all action verbs or 'doing words' and form an appropriate metaphor for its 'constructivist' structure; they are also actions that affect the fabric in some way and that can be used to embrace most embroidery techniques.

Project aims and evaluation

Initially this project was developed as a supplementary resource to support independent learning and face-to-face workshops. Learning outcomes for the resource were identified as aiding development of :

- a familiarity with the concepts and methods of embroidery
- understanding of key terminology applicable to embroidery
- the confidence to improve embroidery through practice
- understanding of the part played by fashion embroidery in the fashion design process
- an understanding of the uses of embroidery by fashion designers

Laurillard's work (op. cit.) was also significant in establishing more generic aims for this blended learning resource. These included the precepts that it should be:

- Discursive in that it supports discussion between students, or student to teacher.

- Adaptive in that it uses feedback on students' performance to determine subsequent learning tasks
- Interactive by allowing change within the programme as a result of student action
- Reflective in how it encourages students to reflect on what they have achieved.

With this perspective in mind, critical review of the resource was conducted at various intervals, and its advantages and disadvantages considered. Laurillard, who was a main source of ideas about elearning, is critical of multimedia resources where they are not truly interactive (if the computer does not adapt its programme in response to student feedback) unless combined with other media to fulfil all the criteria for learning. It was felt that the resource had met this aim, as attention to its use in context had been a primary consideration. Interaction with the learning materials had been ensured by building the use of the resource into the scheme of course work, creating close links to learning outcomes. It had also been integrated into the University's existing virtual learning environment and communication tools.

Technology use, conduct and findings of the project

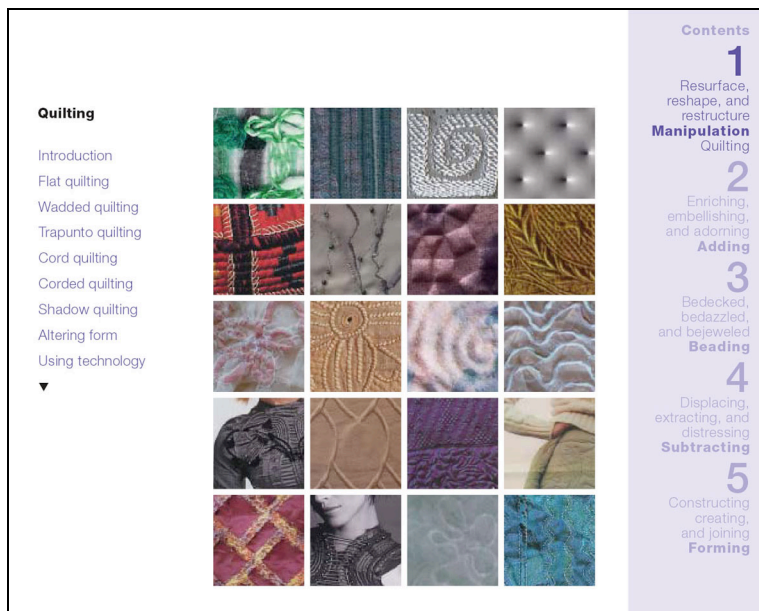
A stated aim of the University of the Arts London is to focus on blended learning rather than wholly online provision. The University's IT Research & Development Unit (ITRDU) has led the way in providing training and pedagogical advice as well as technical enhancements and has encouraged institutional level change in teaching practice, particularly in practice based visual disciplines (Dickerson & Kennedy 2005). The unit's assistance was important in running this project, and the tools that were used included an image board that allowed for integration of images with threaded discussions. Image thumbnails were displayed alongside text discussions, allowing students to have text and images in direct proximity to each other. Image board was also used to allow students to document the stages and processes in the creation of a piece of work and to then invite online comments from peers; these process records were also presented for critique assessments and students were also asked to use the resource to create a reflective journal.

CLIP CETL funding has allowed a technology rich learning space to be created within the institute's textiles area. By working in consultation with industrial contacts the CLIP CETL video and media specialist has been able to develop a camera that works as a document camera but that also that is capable of being freely manoeuvred to demonstrate detailed practical work wirelessly to large groups of students. Importantly it has the capability of recording the image for use on VLE so adding to our blended learning resources.

Research into the use of IT in learning and teaching identifies the importance of evaluation. (Draper, 1966; Fry et al., 1999), and it was regarded as crucial to allow time during and after the project for modifications suggested by user feedback. Two evaluation methods were combined to give evaluative feedback, with observation by the tutor and open-ended questions allowing problems to be detected; these were then tested further by using fixed response questionnaires. It was seen as important to gain feedback from the *actual* classes that the software was designed for, as emphasised by Draper (1966). This required that feedback be collected across two academic years to allow comparison across the Foundation Degree two-year cohort. The evaluation was successfully carried out and has informed both the modification and development of the resource.

Feedback from the students using the new resource was generally very positive. These students had identified through individual and group tutorials throughout the year a number of issues of concern to them: these included the impact of reduction in contact time during the course; the increasingly pressurised nature of taught workshop time; the necessity to work independently in open access situations both at college and at home. Feedback revealed that students found the blended learning resource helped them to manage these challenges. They felt that it was useful for the subject area and that it assisted independent learning, allowing them to develop greater knowledge of their subject during stage one of the course and encouraging experimentation at an earlier stage. It also allowed more flexibility in managing their learning. For example they felt that

the resource, combined with the blended learning activities, allowed for them to recap on demonstration or core input, prepare by reading ahead for the following week or work ahead further by reading through the whole content. This enabled them to use workshop time more productively to develop and discuss samples and ideas. They found it useful during periods of absence to 'catch up' and identified that for the 'computer phobic'; it assists the development of IT skills. Importantly, they felt that existing workshop based and face-to-face learning was reinforced.



Example of page providing subject overview

Conclusions and recommendations

This resource attempted to follow Laurillard's objectives (1993) for designing media based learning, by targeting an area of the curriculum that 'will clearly benefit' and that presents difficulties. Laurillard emphasises that the whole point of new technology is to improve the quality of teaching and learning, not just to open up access to new information and experiences, so it was important that the development addressed student needs identified through discussion and tutorial feedback. The resource's success depended on the extent of integration into learning by course teams and their commitment to blended learning. Initial evaluative response from both students and staff has been very positive in terms of both usability and content; there has also been a positive response to its attempt to further increase integration of digital resources through blended learning. Funding provided for the CLIP CETL has allowed London College of Fashion the opportunity to create a technology-rich learning environment within the textile area; it will continue to facilitate development and integration of this flexible resource, using blended learning to enhance the student experience.

The significance of this project is that the resource was developed in response to an identified need. Additionally important is that although the university's IT research and development unit developed the blended learning VLE tools used the research; an experienced subject tutor determined design and construction of the resource. The initial resource was established and tested using a simple PDF file format, with constructed links enabling interactivity. The project illustrates the possibility of creating resources that can be used within blended learning without extensive IT support. The key to this is basing such resources on successful and established learning and teaching strategies (Fry et al. 1999).

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Innovation Project Two – 'CASPAR, an online self and peer assessment tool at Bournemouth Media School'

Project Leader: Andrew Ireland

Introduction and context of the project

CASPAR (Computer-assisted Self and Peer Assessment) was piloted with two production groups on a first year programme in the Bournemouth Media School, BA (Hons) Television Production. This programme has a long history of peer assessment using paper-based proformas. This case study explores the ways in which CASPAR has been developed to overcome the limitations of the paper-based system.

This project draws together various lines of enquiry and issues. These issues for exploration were indicated by the context, and included the following broad themes.

- How group work can be supported as a vocational key skill for employment;
- The specific issues relating to group work in media production;
- Peer assessment as a valid and valued method of assessment;
- The importance and relevance of formative assessment to student learning;
- Ways of reducing the burden on staff time for assessment, while maintaining the student learning experience.

The issue of group work is of particular relevance, as it is one of the most complex issues for the learning of media production in higher education. Media Production, as a replication of real-world practice, invariably producing artefacts that are the product of groups of people, skilled in different aspects of the production process. In this respect, media production differs to the vast majority of subject areas that are defined as 'art' practice, which tend to focus on independent student projects. For a Higher Education programme to have a vocational edge, group work is unavoidable, and indeed is a key skill that employers look for in graduates. The assessment of group work is particularly problematic, and a number of recent initiatives have attempted to develop effective strategies in this area, many of which have focused on peer assessment. However, academics and students share concerns about this, as summative assessment in higher education must be seen as fair, valid and reliable. It must also be transparent, based on specific criteria. CASPAR (Computer Assisted Self and Peer Assessment Ratings) was designed to answer those concerns (IRELAND, 2006).

Methods employed

The CASPAR project involved a number of stages, including trial studies that refined the method that was eventually used in the pilot project. Student respondents involved in the pilot were from the first year undergraduate Television Production programme, where students work in production

groups to produce work to a given brief. The size of each group was consistent with the number of key production roles following an industry model – Director, Production Manager, Sound Recorder, Lighting, Camera operator, Editor. None of the students involved had any previous experience of peer assessment, and were introduced to CASPAR, and to key features of the peer assessment process during a seminar and subsequent discussion.

The students' use of CASPAR was monitored throughout the six week pilot study, and students were asked to complete a four-page questionnaire which focussed on qualitative views and feelings about the process of peer assessment, and the use of CASPAR. The questionnaires were analysed under their different headings, and trends and attitudes are discussed below.

Development of the resource

One problem faced during the development of CASPAR, was the *time-sensitive* nature of the data being used. That is, peer assessments occurring on specific set dates, with the users involvement in that process being controlled by the logic of the software programme – for example, if a user was late with their peer assessment, then their mark was capped for that assessment at 40%. If they were over two weeks late, their mark was capped at 0%. This meant it was always difficult to test the working functionality of CASPAR unless over a substantial period of time, to check that this programming would function correctly. The first real test was during a live interactive media project.

At the start, the tutor ran into difficulties when trying to create the project. He found that the box sizes that the software provided for data entry were too small, to the point where it was difficult to see what he had typed in (group names in particular). He also raised a point about staff supervision of the project. CASPAR works by having one tutor create a project that students are a part of. As CASPAR uses university registry information with regards to the user authentication process, it will only allow the tutor who set up the project to monitor and moderate that project during its operation. However, in the 'real world' of Higher Education more than one tutor can be involved (indeed it may be argued that this is good practice). This need for other staff to be able to access CASPAR projects they *have not initiated themselves* was noted as something to look into during the next phase of its development.

Another problem that tutors encountered early on was the complex issue of peer assessment dates (PADS). To ensure CASPAR operated as close to standard assessment regulations as possible, the tutor could set up a project with a set number of days leading up to an assessment date in which a student could complete the peer assessment. However, it was not clear to the tutor during set-up if this 'window of opportunity' was leading up to, or centred around, or following on from, the PAD date. These were problems that were addressed before the pilot study was embarked upon.

Technology use, conduct and findings of the project

At the beginning of the pilot students provided questionnaire data about their views on peer assessment and about their anticipations of using computers for this. From examining this data it became clear that students shared some common themes and expectations. Although one student thought the system over-complex, many commented favourably that it looked easy to access and use. 9 of the 13 students said the system would help them see how others feel they're working. This was clearly the biggest advantage of using CASPAR in their eyes. One student made a fascinating comment on this point: "having a response from our peers will be good because they're at the same level as us in learning so their response will be more valuable". This idea that students value their peers' feedback over that of their tutors can be a difficult revelation for some academics to accept. However, it is clear from this response that one of the key advantages of peer assessment is that feedback is highly valued because of just that.

Another key theme was that students felt CASPAR an opportunity to identify group problems, and it provided a way of giving others feedback. This was always expressed with maturity: "method of nicely telling people if they aren't contributing" and "give an opportunity to voice honest opinion of

my peers". 4 of the 13 expressed concern about giving feedback though: "Scared about offending others" and "Will find it hard to say bad things about my friend" as key examples. However, most provided some comments that showed that, although they may find the process challenging, they were ready to do it as they saw the benefits: "We can determine in which areas we lack/excel" and "We can predict and avoid problems in group work in the future due to mutual assessment". This last point was key, as it linked to one of the key features of CASPAR, in that peer assessment took place throughout a project in terms of formative learning, feedback and reflection, and not just at the end, arguably when it is too late as the project is over and there is no opportunity to make good any deficiencies. In most cases, particularly when peer assessment is a paper-based activity, it is saved till the end of the project for purely logistical reasons – it is difficult and time consuming, so it is done once, and that is logically at the end. CASPAR encourages formative learning and development throughout, in terms of group work, and it is interesting to see that even before the students started the project, they saw immediate advantages to that approach.

Ease of access seemed to be another reoccurring feature in the data. Students liked the idea that CASPAR existed on the internet, meaning it could be accessed from on and off campus: "it's online, so it should be easy for people to access" and "online aspect allows students to enter data at their convenience" are two comments that were made.

At the end of the pilot, students were asked to complete a second questionnaire that captured their thoughts and feelings about a range of issues dealing with peer assessment and CASPAR. The questions asked for data on the perceived advantages of a web-based tool; on whether they favoured anonymous contributions to peer assessment or not; their views on having multiple (formative) versus a single (predominantly summative) assessment point; the issue of tutor moderation of grades; their view of the purposes underlying peer assessment; how far written feedback contributed to their learning; their perceptions of the strengths and weaknesses of CASPAR; and their degree of agreement with the feedback received.

Key findings that emerged from the data included:

Ease of access: students could work on group projects not just on campus but effectively anywhere in the world (students often choose to shoot nationwide and overseas) and could gain access to the system, read and post feedback, and use the online journal, no matter where they were. The end questionnaire revealed that indeed the students had chosen to access CASPAR mostly off campus.

Anonymity: although anonymous systems for contributing peer assessment could be seen as inviting abuse, this pilot saw no evidence of this, with individuals acting with integrity to be helpful to others, even if that process was uncomfortable. However, students noted the depersonalised aspect of peer assessment via an online system, questioning why a person wouldn't say it to them in person. It was considered that a forum where negative comments could be discussed as a group would be a good way to resolve issues. CASPAR itself may be modified to be able to help by providing a 'resolution centre' where students can respond to negative comments they've received. An important finding during the pilot was concerned with the anonymity offered to students, when it became clear that students could work out who was writing what. It seemed that the feedback a student could read in their profile was presented by alphabetical order by author, even if the authors's identity was hidden. As the 'student view' of CASPAR includes the names of their group members in a box, written again in alphabetic order, it didn't take long for one student to see a link between their knowledge of others' writing styles, and the alphabetic order of the feedback. When it became clear that this was the case, the ordering was changed to a more random setting. Even after the change, some students still reported they could 'tell' who wrote what, based on their style

Multiple assessment points: one outcome that surprised tutors running the project was the strongly expressed student preference for multiple assessment points. Every student in the pilot said their preference was for assessment 'throughout', as in the following comments -

“Multiple points throughout – so you can monitor your own progress throughout and act upon any problems”

“Definitely throughout, otherwise we learn what we’re doing right or wrong too late.”

“I prefer multiple points because my opinions changed for some group members throughout the process. Mostly for the better!”

Tutor moderation: students appeared to accept that, although minimal interference was the principle adhered to by tutors, this could provide a safety net, and a “double check” that no-one was pursuing a personal vendetta. Students also accepted that moderation would rectify any marks that were “out of place”, “strange” or uncharacteristic in describing individual performance.

Purposes underlying peer assessment: students contributing assessment statements and grading on their peers were clear that they were providing a personal ‘opinion’. They predominantly saw grading as resting on the degree of hard work and effort put in by others, gauging this in terms of reliability in carrying out allocated roles, project management and technical skills and acting as an effective team member.

Contribution of written feedback to learning: written feedback allowed students to learn about their perceived strengths and weaknesses, and one of the key advantages of CASPAR was the large volume of feedback generated that didn’t take up any tutor time. Students commented that they learned a variety of things from reading feedback on CASPAR, including -

“I learnt that most of the time that my group valued me and my work. They liked the fact that I contributed my ideas and got involved with the production.”

“Essentially everything I was told I already knew, for example I only got comments that I was unmotivated after I said in a group meeting that I felt less motivated than usual.”

“That I can be ‘too’ involved on occasions, intimidating other group members and interfering with their roles simply due to my excitement and enthusiasm towards a project, and that this irritates some group members.”

The feedback was usually found to be written in a supportive and friendly way, and showed that students can provide a fair and balanced view, using the established project criteria and their own terminology to help drive the comments.

Perceptions of the strengths and weaknesses of CASPAR: some of the strengths related enhanced opportunities and sources of feedback. One student liked “to hear the honest opinion from my group members on how I’m performing”, while another put it as “reading nice comments about myself”, and “I like to see how I am progressing from other people’s perspective rather than my own”. These comments seemed to help raise students’ confidence, especially in the first year of study, as they want to hear what other people think about how they are doing. They also valued this kind of feedback because it came from their peers – not their tutors.

Other strengths reported included ease of use of the system, which didn’t take up too much time to use. This was an important factor in development because it was thought that if it was complex or difficult, it would simply present students with reasons why not to engage with it. The questionnaire also asked them if their group working abilities had improved through using CASPAR. The majority were positive: “Yes, because any problems we have can be acted upon”, and “I think it made me realise how unequally work is distributed across our group”, and “It was good to see that the group appreciated my work. At first I was conscious of it and probably thought about what I was doing more but after a while I don’t think it made a lot of difference”.

When discussing what they liked least about CASPAR, the students all pointed to the issues surrounding giving negative marks and comments to their peers. One commented “the fact that

people sometimes take offence to what is written about them". However, they really valued reading honest opinions about their performance from their peers, but they didn't like writing that same honest feedback for each other. Students often find this the most challenging aspect of the work, and only time and practice can help them overcome these feelings, something that the repeated use of CASPAR may help with.

Another weakness about the CASPAR system that one student highlighted was that it was difficult to remember to do it. Often students would not complete the peer assessments by the due date, meaning their marks were capped at 40%. In these cases tutors removed the cap, as they felt it best that the students saw the marks they were receiving as a true reflection of their peer's views, and not distorted by assessment regulations.

Degree of agreement with the feedback received: there was clear evidence that students agreed with the feedback that they received 'most of the time'. The only divergence from this response came with one student saying they 'totally' agreed with it and one other saying that they agreed with it 'little of the time.' Therefore, it can be concluded that although the process may have been uncomfortable, students could see the value in telling each other what they thought they "deserved to know", and most of the time students on the receiving end agreed with it.

Conclusions and recommendations

This case study has been highly valuable in learning how CASPAR should be developed as a learning tool for courses that include group work. CASPAR represents a 'one-stop-shop', a unique blend of pedagogic theory and best practice to aid the independent learning of students in Higher Education. Peer Assessment through CASPAR is valid, and reliable, as the tutor can easily moderate the marks. Students have been seen, though this pilot, to 'care' for feedback written by their peers, and they have been seen to act on feedback received. The formative on-going nature of the peer assessments gives the students an opportunity to learn, reflect and grow as group-work members during a project's duration, and become more confident when they hear from other points of view how they are performing. Most importantly, students receive lots of timely feedback that has taken the tutor *no time at all*.

It is intended that CASPAR will be modified following the findings of this case study, and the new version will be available for other institutions to use. Continuing investigations and piloting of the system in different scenarios will continue to improve it as we learn more about how students interact with it as a learning tool.

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Innovation Project Three – 'Virtual and Visible: Reflections on Blended Learning at Southampton Solent University'

Project Leader: Ken Marsden

Introduction and context of the project

This project reported on here forms part of a current 'action research' project within the school of design at Southampton Solent University. The project aimed to evaluate the impact of implementing a blended learning unit, delivered to all Level 2 students undertaking BA (Hons) courses in Graphic, Fashion, Product and Multimedia Communications Design, during 2005/06.

The unit was primarily concerned with requiring students to formulate a research topic into a working proposal, in preparation for their dissertation at Level 3.

As art and design students tend to find the theoretical part of their courses somewhat problematic, it was felt that any additional form of learning support may help improve their written and communication skills. According to Trigwell and Oliver, 'blends of e-learning with other media may make it easier to help students experience the variation in critical aspects of the topic being learnt' (Trigwell & Oliver, 2005). At the time none of the design courses offered online and/or distance-learning modes of study, so it was intended that e-learning would not replace, but be integrated alongside, the more traditional 'face-to-face' delivery. Furthermore, staff and students did not see the need for the removal of existing and/or traditional teaching methods. The rationale for introducing *blended learning* into the design curriculum was based upon giving students the opportunity to further enhance the quality of their work, by achieving six key objectives. These were to:

- engage in regular research related activities to encourage deeper learning
- improve the level of critical thinking and evaluation skills
- further focus and enhance the quality and depth of the research topics
- extend the opportunity for giving and receiving formative feedback of a more reflective nature
- increase the access to information directly and indirectly related to the unit
- improve the level of student motivation

Methods employed

Research methods employed for the project included:

- interviews with, and questionnaires completed by, a cross-section of Level 2 students from each design course;
- a sample of the 200-word reports written by the students within the project assignment;
- discussions with and feedback comments from all colleagues of the teaching team;
- consultations with staff from the university's e-Development Centre and the faculty's education developers;
- reflections based on tutors' personal experience relating to the teaching and academic leadership of the unit.

Development of the resource

Activities were organized to prepare users for engagement in blended learning, including meetings with senior learning technologists from the electronic Development Centre (eDC); these discussions focused on how the existing curriculum content and delivery could be modified and accessed via the university's virtual learning environment (VLE). The subject librarian was also consulted with regard to ensuring that all the existing (and any new additional) library resources and links would be made available through the VLE. Training sessions on how to use the VLE – spread over several weeks prior to the start of the academic year – were organised and presented by eDC staff for the teaching team and library staff. Similarly, students attended a number of large group sessions at the beginning of the unit and small group 'surgery' type tutorials were also made available.

Technology use, conduct and findings of the project

Students involved in the project were split into small sub-groups of four or five. In order to formulate and develop his or her research topic, each student was required to undertake four *off-campus* written tasks, over a period of 8–10 weeks. These individual tasks were posted up in the forums and both students and tutors gave formative feedback / suggestions etc., on the postings. In addition, the tutors posted up some general comments on how each sub-group was progressing

in terms of the quantity and quality of the postings. Each student was also required to create their own file store for uploading resources e.g. URLs, bibliographical references, photographs, etc. Students within each sub-group were able to access each other's file store and were required to comment upon/make suggestions to help each other.

The blended learning element of the assignment to be assessed required students to write a reflective evaluation of how and to what extent their sub-group's comments and views, which were posted up on the VLE, helped to shape and/or influence their own topic. This element was worth 10 per cent of the total mark for the unit. Out of a possible 190 respondents, the number of students that actually registered on the VLE was 175. There were 25 separate forums created, containing 682 postings, thereby averaging nearly 4 postings per student.

The findings of the project will be reported under the six original project aims:

Objective 1: Engage in regular research related activities to encourage deeper learning

As the unit progressed there was a gradual decrease in the number of students undertaking the full range of tasks. This was due to a lack of participation from other students in the smaller groups, making it more difficult for those who did want to engage and communicate. However, there was some evidence of students discussing and commenting on the work outside of the 'normal' seminar group. All students had the opportunity to see the postings of their peers, not only from their own group, but also from all of the other groups across the school of design. Some students commented that it was helpful to be able to see other proposals and that, in turn, helped them to form their own. Further, the links to other universities and design companies/industries, designers, etc. were seen as being particularly helpful.

Whilst a number of students stated their preference for the 'immediate' response within the seminars, most believed that the VLE had a distinct advantage over the seminars, in that students were able to return as many times as they wished, in order to read and reflect upon the postings and if necessary refine their proposed topics.

Objective 2: improve the level of critical thinking and evaluation skills

Most students believed that undertaking the tasks 'forced' them to become more reflective and judgemental. Further, the 200-word assignment helped to ensure that they *engaged* in some form of critical thinking and reflection. Whilst the staff commented that the levels of critical evaluation, as evidenced in the postings, did vary enormously, it was felt that with more practice and engagement with the process from *all* students, these skills could and should improve.

Objective 3: further focus and enhance the quality and depth of the research topics

Most of the students who fully participated in the VLE commented that their design topic proposal was informed and enhanced by the work they produced in the VLE. In particular, it helped to further focus their area of investigation and to accumulate a wide range of information sources in support of their topic. Some students believed that by posting up their own work and including comments on the work of their peers, it did help to overcome the problem of lack of participation in formally discussing each other's work face-to-face within the class environment. A number of students indicated that if more students used the VLE more often, it would have had a beneficial effect on the work produced – the fact that some didn't contribute made it more difficult for those who did.

Staff believed that, in comparison with previous years, some students were able to demonstrate a deeper level of refinement and direction of their topic. Further, those students were able to acknowledge to what extent their topics were enhanced by the direct or indirect help and support of their peers.

Objective 4: extend the opportunity for giving and receiving formative feedback of a more reflective nature

Students commented that being able to communicate and comment at any time (i.e. 24/7), rather than at just the weekly seminar, was very helpful indeed. However, some students said that the VLE was more impersonal than the seminars and therefore they didn't find it as helpful. In general, the students regarded the tutors' postings as being helpful and constructive. This was primarily as a result of the comments being clear and concise and thereby easy to read and understand.

Objective 5: increase the access to information directly and indirectly related to the unit

In addition to the printed versions of the unit's learning and teaching resources, (e.g. the Unit Information Guide, unit descriptors, lecture notes, etc.), there was additional information including Forum postings, tutor notices, message updates, etc., also made available on the VLE.

Approximately 10–15 per cent of students did encounter various technical problems from time to time with off-campus access, which inevitably had an impact on the extent of student engagement with the VLE.

Objective 6: improve the level of student motivation

There was no real evidence to suggest that the introduction of blended learning actually increased the motivation of students. Typically, the more motivated students did actively participate in the process, whilst less motivated students, not unsurprisingly, did not!

It would appear from the evidence gathered that those students whose courses rely less on the use of computers (e.g. fashion), were not as motivated as those whose courses did (e.g. graphic design). However, for some students on these courses, the VLE was not as technically fast or as user-friendly as they were used to and consequently reduced their motivation for using it. For some other students, the fixed time of regular weekly seminars was preferable to the infrequent nature of responses posted up on the VLE.

Conclusions and recommendations

Other than the findings reported above, one significant point that emerged from the project was that it involved a significant increase in tutor workload. This was primarily due to the amount of time spent reading and posting replies to student queries and to providing postings associated with students' blended learning tasks. However, the teaching team agreed that this would improve as they more rigorously enforced the protocol for responding to these communications. It was also suggested that more specific training on the VLE and simplified *how to use* guides would be help to reduce some of the workload.

The project team identified some inconsistencies with regard to the quality and quantity of tutor responses across the forums and between different seminar groups. However, the teaching teams involved viewed this as a constructive piece of criticism and will endeavour to apply a more uniform process to ensure greater consistency in the future.

In terms of future development, the faculty has established a number of learning enhancement projects, which are being funded from the TQEF (eLearning stream). A small number of staff – some of whom are from the School of Design – have been identified to develop a range of different blended learning models, aimed at enhancing the student experience and creating new opportunities for student learning. Some of the blended learning (directed study) tasks being considered by the design staff will focus less on small group forums and more on students working either individually and/or in pairs, producing e-portfolios of research, critically reviewing each other's texts and undertaking computer aided tests on research methods. This resource will be piloted using a new open source e-learning platform during the next academic year.

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Innovation Project Four – 'Introduction of ICT into Studio Practice in Graphic Design at Cumbria Institute of the Arts'

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Introduction and context of the project

The case study carried out at Cumbria Institute of the Arts as part of the Distributed E-learning project was based on the central theme of technological integration into Graphic Design studio spaces. There is a long-standing tradition of Graphic Design at the Institute, with an experienced team of full and part-time lecturers who cover a range of Graphic Design specialisms; these include typography, editorial design, advertising, corporate identity and illustration. There are currently 122 undergraduate students enrolled on the BA programme. The project had a key focus on assessing the impact of importing technologies into studio spaces that had until recently been operating in a more traditional art and design pedagogical mode. Opportunities for the related development of e-learning activities were also a significant point of interest.

Methods employed

Research was undertaken in the real-life situation of the Graphic Design department of Cumbria Institute of the Arts, based in Carlisle. Data collection took place throughout the months of March and April 2006. Several different ways of gathering evidence were undertaken, including:

Interviews: one to one interviews were conducted with members of lecturing staff in the graphic design department. Similar interviews were conducted with student representatives across all three years of the full-time BA (Hons) Graphic Design course. Their purpose was to gather opinions on the impact of technologies on graphic design learning and on the experience of integrating technologies into the studio teaching spaces on the graphic design course. There were fourteen interviewees in total. Interviews were recorded and ranged in duration from 20 to 40 minutes.

Observations: twenty three studio observations were undertaken, covering 18 hrs of events in the course's two main studios, and in a smaller adjacent room with accommodation for five students. Activities observed included lectures, studio based group work, studio based project work, guest speakers, small group critique sessions and whole group assessment activities. The observations were designed to enable understanding of the studio environment and the way that it is used on a day-to-day basis. It was hoped that they would enable the identification of key strengths and weaknesses in the use of technology to support teaching and learning in the studio environment. Observation was also an important means of triangulating the comments made by interviewees.

Data analysis was undertaken cumulatively, as the project developed. The research process began with the forming of questions to ask tutors and students, and the responses to these questions led to a focus on common themes that were clearly of the most relevance to staff and students. Thematic analysis of data was undertaken based on the specific learning technologies that had been discussed and observed in the data-gathering phase of the case study. These were mapped in an attempt to build a picture of linked themes.

Integration and use of technological resources

The current situation

Because the Graphic Design course is of a visual nature, briefings and other delivery methods frequently require the inclusion of images. In the past, the process of finding images in a book and having them made into slides has been expensive and time consuming. Also, with the nature of the graphics industry changing so regularly, the value in doing this has not been great, and as such has not always been carried out. Presentation of such material has often resulted in showing images to the group out of a book. The introduction of a data projector into the studio therefore had a major impact on the delivery of course materials. In particular, first year project briefings improved even though the core content did not change. Students have commented on the delivery being an engaging experience, and that this is down to the tutor role rather than the supporting technology. However, they also recognise that without the projection this type of delivery would be impossible.

"You can see more, get more detail from it all. Everyone can see. Because if it's a full class you can be sat right at the back of the room, and there's 30 in the group." STUDENT COMMENT

Tutors have also indicated the success of this technology being integrated into the studio environment. Although digitisation of materials has initially been time consuming, in future it is a case of updating material where necessary which appeals to staff, so there is overwhelming support for the need for such equipment.

"It's freed us up to use our room as a lecture theatre." TUTOR COMMENT

"The great thing about the digital projector is that it's much more democratic."
TUTOR COMMENT

Observations of the use of the projector supported these comments. A comparison of first year briefings from year to year identified that student access to information has improved. The need for tutors to repeat themselves had vanished because a file version of the presentation could be issued as required, and the flexibility of the information to be updated saved time. One observation of the use of this technology did show up its fundamental weakness. A wire that connected the projector to the laptop became detached during delivery. When the technology failed, the session was halted, demonstrating that a free flowing delivery was reliant on the laptop and projector working properly for the duration of the session.

Both staff and students were very supportive of the use of this simple technology. The flexibility that the equipment offers is vital to staff - that same method of slide projection can be used to support a lecture, or to display student work in an informal peer assessment. The integration of the data projector has also encouraged staff to begin the digitisation of course materials; this also lays the foundations for the future inclusion of a VLE.

Macs were first introduced into the graphic design studios at Cumbria Institute of the Arts four years ago. Their presence has now spread to all studio facilities available to graphic design students. There is no doubt that the inclusion of computers has changed the dynamics of what was a 'traditional' art and design studio, but the perceived effects of the Macs' presence have varied among respondents, as the following quotes show:

"If they weren't here I would probably spend more time at home doing my work on the computer at home. In that sense I am quite reliant on it." STUDENT COMMENT

"I've done more work on my PC at home because I'm used to them rather than Macs."
STUDENT COMMENT

Students indicated that they consciously made a decision as to where they would work. This shift from a studio centrality is indicative of the times, and students expect to be able to work from home if they wish. Tutors appear to have come to terms with this change:

"If you went in a studio fifteen years ago there would be drawing boards everywhere and pots of paint, and collages stuck on the wall, and very experimental, tactile things. And to some extent that's what we've sacrificed and I don't think we saw it coming, but that's what has been sacrificed with the advent of Macs in the studios." TUTOR COMMENT

'Hot-desking' has now become an everyday part of studio life. However, without students claiming ownership of studio space, there is no personalisation of space, leaving the studio bland and undecorated:

"White walls, white computers, grey desks. I would like to see a bit of colour. I suppose it's our fault as well, we could decorate it. I think people just can't be bothered putting stuff up when they've got stuff to do. I think most people put stuff up when they want to look at work in progress, but other than that it is quite bland in here." STUDENT COMMENT

Students understand the notion that their studio space is not all that it should be, and that they are in large part responsible for this, but appear to be apathetic about the situation. Again, the lack of the students' time in the studio is a contributing factor. In the smallest of the three available studio spaces however, the student attitude appeared to be slightly different:

"The tutors always say we should put our stuff up. I've started to personalise this area, but that's the good thing about being the one of the few who use this room. I feel comfortable putting up stuff in here because I know everyone in here, and I know I won't offend people." STUDENT COMMENT

The same cluster of third year students generally used the small room containing the slightly more powerful G5 Macs. This room is quieter than the main studio and this has been identified as the main reason for wanting to work in it, but it appears that consistency of use reflects personalisation of space. There is a distinct correlation between the presence of computers at desks and the personalisation of space. Because of hot-desking in the main studios, there is no indication that any one student 'lives' in any one place in the studio. Tutors commented on this change in studio use:

"There's always been the opportunity for students to stake a claim to a desk if they want, and we allow them to change the configuration and boards around. But they tend to just use computers when they're in now, when they're in." TUTOR COMMENT

This issue has further consequences. There is less visible project work being produced in the studios than when the Macs were not there. Of five hours of project based studio observations, students were spending three quarters of that time on the computers, and one quarter working on paper at desks, and that quarter was predominantly during observation of first years. Nonetheless, students across all years do seem to be aware of the work that their peers are involved with, and the general consensus is that to be in the studio is a beneficial experience:

"You tend to think you don't need to come into college, because you have the computer at home and you can do it there. Now I tend to come into college everyday. Because as well as not having the Internet at home, it's just better to be around the other students" STUDENT COMMENT

Internet access is provided, and this is used heavily in the studios, mainly for project research or personal email. Tutor comments bear out that students are responsible in their use of the online facilities, and they praised the information revolution's positive impacts on the course:

"The old problem with graphic design was the time lag between the book and the practice now. So you'd have to go and read Creative Review, and you'd get a small insight into what was

happening, because books by the time they go to print are always five years out of date anyway... So I think the more tuned in students now are far more informed than what's going on in the here and now than people of our generation were." TUTOR COMMENT

Students were appreciative of the pragmatic benefits the Internet could offer them to support their study:

"Every graphic design company has their own website these days, so it's good for looking at what's there already as well." STUDENT COMMENT

Tutors have email addresses for all students, and mailing lists are used in order to contact them. As far as tutors are concerned, the main benefit of communicating with students in this way is that they can maintain contact with those students who are ill, or away. With the large amount of foreign students, many Scandinavian, this is invaluable. However students, particularly those in the first year, rarely use their college email, if ever. This was because they were present in the studios so regularly that they could find out everything they needed to know by using the notice boards. First year students also tended to prefer to approach tutors and technicians directly for support. Also, students do not have each other's emails, so notice boards are a fundamental part of the cross course communication that regularly occurs. Despite this, tutors are encouraged by the potential of digital communication and the key to this is the communicative benefits that having high bandwidth Internet access provides. The opportunity for tutors to maintain contact with students in and out of the studio is the simple but vital piece of progress made.

Although it does not exist as yet, tutors are keen to implement a VLE in order to streamline briefings and assessment, as well as opening up a new line of communication with students. Students, who already use blog systems to chat to other students and creatives, would also welcome a forum in which they could access course materials, grades and briefs, as well as having a constant and clear message board:

"Yes I think that would be a good idea. In my first year when I went to lectures I would take a recording, but I got out of that. If I'm writing down what the lecturer's saying then I'm not really paying attention, so I tend to sit back and take as much in as possible but you don't remember everything. So I think having past lectures or a copy of the lecture notes on the Internet would be a good idea." STUDENT COMMENT

However, they were adamant that they would not want to give up their physical notice board, although one tutor commented about the use of email, *"Over time, it's almost coming to replace the notice board."*

For staff, having an online portal facility is would undoubtedly be advantageous -

"It would significantly reduce the different strands of communication and centralise them. So those repetitive questions like 'do you have a copy of the brief?' would be cut out. It wouldn't save a lot of time, but the environmental impact would be quite high. All the paperwork would be online." TUTOR COMMENT

As with email, communication is of the utmost importance. Observations of sessions have been unable to identify the true value of email to the course, but interviews suggest that it can bridge the distance gap. First year students say that they rarely use email to communicate with tutors, *"We're just used to using Hotmail and our own email addresses. The tutors have those but I've not had any emails to that address."*, but their attendance is more frequent, so they do not have the same need to. Students in second and third years of the course have a more fragmented attendance pattern, and as such tutors are more reliant on email communication. A VLE will help balance distributed e-learning.

Although the Macintosh computers have a different operating platform from PC's, students who need to switch from one to the other had no problems with interoperability. Files have been shared

through an internal 'drop box' accessible through students' college accounts. This has been subsequently used for part of the summative assessment process in years two and three. Generally students utilise USB sticks, iPods, CD-R, CD-RW and email to transfer files. Some students also have laptops that they bring to college. The biggest problem encountered was that of Internet security. Institute firewalls could prevent access to appropriate research material, and tutors commented that this could be time-consuming and frustrating. However, it was acknowledged to be a necessary security precaution.

The Future

There were several possibilities suggested on a wish list provided by respondents. Students asked predominantly for those technologies that might provide a 'quick fix' to their studio troubleshooting, such as extra printers, scanners and digital cameras. The suggestion that some kind of video conferencing could be beneficial is again only possible because of the technology that has already been imported into the studio.

Tutors offered a considered list of requirements. *"I think laptops will be crucial. We're fighting for that as staff, we want that. Because it's one of the issues we need to look at, in terms of physical studio space, which has to be a flexible space."*

The focus for staff was the improvement of communication between staff and students through implementation of a VLE specific to graphic design, and the extended use of email. Ultimately, tutors were unanimous in their opinion on the importance of technology's future role on the Graphic Design course at Cumbria Institute of the Arts:

"I think we need to be more proactive to think in advance rather than let technology evolve around us. I think we need to be masters of our own destiny, or to work towards a system and say 'if it's going to go this way, what are the implications for networking, licenses for software, how do we go about that?'" TUTOR COMMENT

Conclusions and recommendations

There are clear indications that the introduction of technology into a creative studio environment can have a major impact on the way in which a traditional graphic design studio operates. Although students strongly perceive that their higher education offers a realistic industry experience, in most cases this is based on little experience of what a graphic design studio is like. Indeed, students who have experienced the 'real-world' comment on the distinct difference in personalisation and pace. The changing face of the industry is as a direct result of the newer technologies being made available to designers, the main change in the last decade being a massive shift from press printing to digital.

Some distinct conclusions could be drawn from the evidence presented in the case study: The studio has become more physically flexible because of integrations so that teaching and learning has benefited. There is also now scope for future technological integration using existing the technologies. The introduction of the data projector is a beautiful illustration of an old technology being brought up to date. Its simplicity is an indication of where the strength of integrating new technologies lies. Focusing on what already works rather than reinventing the wheel has shown to have a very positive impact on the course delivery. This success should inform the future technological changes that are made on the course.

Potential for improved communication now exists as the hardware to support a VLE now exists and is a necessary presence in the studio. Again, the simplicity of what is trying to be achieved will be its success. In addition, the platform a VLE can provide substantially improves the versatility of the course offering, particularly in context with distribution of e-learning.

The presence of Macs has a positive and negative impact on student's development because they increase the students' knowledge and experience in using industry standard technology, but can

detract from practising fundamental communication skills. Their presence is needed because not all students have access to the industry standard hardware and software, which is very costly. Even though most students have a computer at home, the presence of Macs in the studio actually encourages them to work at the institution.

Overall, it has become apparent that computers are now required as a matter of course. For all the benefits that they bring - advanced communication, information access, and industry technologies - learners engagement with them can create pedagogical and vocational drawbacks.

There is now less externalisation and visibility of work during the design process, which affects the student's need to communicate about their work – the fundamental purpose of the studio environment. The idea that externalisation produces a shared account of the cognitive processes involved in undertaking tasks [Bruner, 1996] is highly relevant to visually based subjects, where formative peer critique is a fundamental vocational skill. The lack of personalised space in the studio environment is a direct result of less externalised work, and has resulted in a bland studio environment. This undercuts the learning potential of the shared social space of the studio and its communal resources.

The skills for employability required by students are also of concern to course staff:

"Portfolios are vital to getting the students into employment. I think they underestimate the human aspect of them getting a job. These skills have to be learnt."

However, maintaining the balance between the realistic industry environment and an environment conducive to learning is an obvious precursor to this. As well as this, the technology enhancing the studio has to provide flexibility. That includes the short-term considerations of the immediate benefits to students and course delivery, and the long-term in requirements for future integration of new technologies.

The suggestion of one member of staff to conduct a formal assessment of technology needs as a course team would seem to be beneficial. This would enable staff to identify key strengths and weaknesses and generate course specific criteria for successful e-learning.

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6. Findings from Focus Group Research

Focus groups were held at seven British HE Institutions in 2006, drawing on respondents from a variety of art, design and media disciplines. Respondents had a variety of roles, predominantly as lecturing staff, but ICT support staff were also well represented; students were also involved in four of the focus groups. Despite the variety of art, design and media disciplines represented and the range of roles held by respondents, key concerns appeared to be replicated across the sites studied, providing triangulation of findings and enabling the data to be assembled under the headings offered below. Several themes emerged strongly from the discussions, notably those relating to:

- **the happiness factor: issues of affect in e-learning**
- **drivers and motivators for ICT use and development**
- **equity and access**
- **perceptions of learning and the impact of e-learning**

The findings are therefore reported under these headings, each of which generates a number of sub-themes. The first issue discussed, that of 'affect' has been reported first because it emerged as the issue of most significance to respondents, whose 'feelings' and 'dispositions' towards technologies vividly coloured their experience of e-learning. Our respondents therefore described the whole gamut of emotions that technology use generated in them, and as contemporary learning theories recognize the indivisibility of emotion from thinking, learning and understanding it is worth giving these views some attention. The second theme was one that related primarily to teaching staff, with a mixed picture emerging of how institutions managed technological change and their expectations of staff engagement with e-learning. Under the third heading, significant points emerged about how ICT can enable increased access to learning, although unequal distribution of resources and support and technological incompatibilities have the potential to undermine this. Here there were also interesting indicators of the ethical approach that staff and students are taking towards sustainability and equality issues in technology use. The fourth section provides an overview of current views of learning in art, design and media and of the impact of e-learning on the sector. Some of the main uses of ICT are described by respondents, and the challenges as well as the opportunities posed to users are discussed.

Respondents have been anonymised in line with the ethical assurances provided to participants in the research, and the higher education sites involved will be referred to simply as Institution A, B etc. More detail on the constitution of the focus groups is included in the section on research methods (see Section 3 above). Direct quotes from respondents are included in this section, italicized and placed in double inverted commas – e.g. "*learning*". Although referring to one instance of comment, individual quotes have been chosen as broadly representative of a theme discussed by several respondents; sometimes quotes have been provided in clusters to illustrate a general consensus of opinion.

- **The happiness factor: issues of affect in e-learning**

In the preface to her book on learning in the digital age Gilly Salmon poses three questions that she regards as being most significant for establishing principles for e-learning, one of which is 'how can teachers and learners use technologies happily?' (Salmon, G., 2003). This section of the report focuses on this 'happiness factor', examining what makes respondents in art, design and media happy and unhappy in their technology use. The 'happiness' in question is a relative term as the background is one of rapid technological advance, sometimes contradictory pedagogical aims and the ubiquity of core technologies that are concurrent but frequently incompatible. In higher education the pressure for change is intense and in describing their ICT use in art, design and media respondents in all roles referred to the high learning demands made of them. To put it colloquially, a very steep learning curve had been experienced and was still being experienced by most participants. They also saw themselves at very different positions on the e-learning mountain, with some negotiating the peaks and others just gathering courage to venture beyond base camp.

At the pinnacle of ICT use ...

Respondents often experienced conflicting feelings about their use of ICT, and their level of satisfaction with core technologies often depended upon how confident they felt in their own capabilities as a user. The expectations placed upon them by others (i.e. institutional managers, tutor or student peers, those in other roles in the learning and teaching relationship) were another key factor in this.

For example, one lecturer at Institute A communicated a strong confidence in his use of ICT, both in terms of his own skills and in his belief that it provided real benefits to student learning. His institution's use of Blackboard as a VLE had provided obstacles to uptake within the school of art and design, due to colleagues' initial dislike of the visual presentation of the software, and he recorded that *"Lots of people have a tendency to say 'we don't want this, it looks terrible'"*. However, he had overcome this reaction himself, noting that *"I decided to look past that [because] it offers a very good resource in terms of being able to house content"*. External drivers in the form of funding for remission and software purchase helped to progress the work that this lecturer's personal orientation and intrinsic motivation had begun. A strong feeling of ownership of the work undertaken demonstrated his engagement with it, and the fact that the university did not attempt to pressure him too much for completion was also appreciated. The opportunity for experimentation was particularly appreciated, as was the 'right to fail' –

"It was fun ... because I knew that I was doing something nobody else had done ... [so] you can get things wrong and nobody's bothered. When you're trying to get something done that's experimental, you've got the right to failure".

The fact that he found the development activity to be 'pleasant', 'fun' and a source of personal satisfaction was integral to the role that he later adopted as unofficial ICT 'expert' within the department. Teaching colleagues reported that they routinely referred to him for help with computer use, and his support was a significant factor in their own development in this area. There was other evidence that the more formal training sessions on offer were not widely taken up by staff, so the accessibility of expertise via a helpful colleague was particularly important.

The same lecturer had built significant and productive working relationships with colleagues from the ICT technical support area, and he regarded this "...creative collaboration..." as resting upon a willingness to consider them as co-collaborators in a joint enterprise rather than as "service" or "menial" workers. The mutual respect built in this way enabled the technical support staff to engage productively with the learning and teaching aspects of the project, so that the tutor could report that *"I think they've been very happy to work with me because I've always been asking them to do something other than house-keeping."*

At another institution there was already widespread adoption of ICT for learning and teaching activities. This had resulted in tutors' high degree of reliance on computers, which were seen as integral to all aspects of work. A high value was placed on 'favourite' technologies, with which users were seen to have developed relationships of dependence; for example, one technician/lecturer reported that –

"I really can't picture my job without a computer, it's a horrible thought ... If someone went into my office now and took it away I would be completely lost."

Others reported having *"struggled"* to cope after a recent relocation meant they were without communications technologies for a period, while the issue of technological access dominated staff meetings *"... it's always top of the agenda."* There was a clear overspill between the familiar technologies of working life and those related to leisure and personal time, and access to up-to-date technologies was important for in less work-related ways. For example, tutors described the benefits of having portable entertainment on tap for "recreation, watching DVD's", "taking my music when away" and as providing relief from everyday pressures - "escaping the humdrum".

Six students in the focus group at Institute B described the multiple uses that they routinely made of ICT, with learning-related activities coming relatively low in their list of priorities. Enjoyable activities such as game-playing, internet shopping and general email use were noted as key uses, with *“work-related things”* coming after leisure-oriented ones. Overall, students in all of the institutions expressed recognition of the positive potential of computers to enable personal interactions, both in learning and in life. One respondent was enthusiastic about the use of webcams, which enabled her to communicate with her daughter who was away at university – *“Now I have Skype I can talk to her as much as I want.”*

Respondents recorded a variety of leisure as well as work applications in their computer use, with ratios of leisure to work usage changing according to current priorities. There was an aspirational aspect to this, with students adopting an imaginative view of the potential of technology to open up new horizons, so that individuals were empowered to defy restrictions of time and space. These views were referenced to students’ experience of the science fiction genre, and they described computing as enabling them to *“... live in a different sense”*, engaging in *“... time and space travelling ...”* and *“communicating across the world; it’s mixed up with Star Trek.”* There were additional aspirations for human/ICT synergies - some currently outstripping technological realities and likely to do so for the foreseeable future; for example, one favourite function was described as involving *“the telepathy chip”*. This was a common theme, with students explaining how it might work as follows:

“I’d like something that could translate my brain into something I can use”

“I’m really dyslexic ... I tend to forget things as soon as I think of them. So the computer would read my mind and keep a list of all the things I need to remember plus vibrate when I need to do something”

Students were disposed to like and enjoy computer technologies, and where manufacturers had made efforts to produce inviting designs they were much appreciated. Colour and shape was a significant factor here, generating loving descriptions of appealing hardware:

“I saw this really nice wide-screen laptop ... the other day and it was really nice and flat and it was bright orange with red pinstriping”

“I’d like it in pink!”

“I like the Dells because they’re black and they’re sleek.”

They frequently described their personal acquisition of new technology as *“exciting”*, and sometimes as emotionally satisfying – *“It’s called a Sea Disk so I call it my little sea cow. I like having that, it’s like a little pet ... [it] is pretty.”*

Ups and downs ...

Not all experiences of computing were as satisfying as those recorded above, however, and respondents described their ambivalent attitudes to ICT use. A strong sense emerged of their using the focus groups as an opportunity to reflect on these positive and negative factors and come to a balanced evaluation of the current situation. This section of the report therefore reflects this ambivalence in respondents, and is less conclusive than elsewhere.

Tutors in one institution described the ways in which most of their apprehensions about using computer technologies had proved unfounded. They described the *“basic fears”* that most of their colleagues had initially had about using laptops to record tutorials and keep student records as having been overcome, although there was still *“a lot of apprehension”* in other faculties which were only embarking on this change. Most full time art, design and media staff were issued with laptops and were reported to have *“taken well to using them as part of their everyday practice”*,

while earlier fears about the potential for damage or loss of these expensive mobile resources had proved unfounded. Only one laptop had been damaged and one stolen in the course of five years. However, use of the Institute VLE was reported to be less developed. Despite its clear potential one tutor noted that *"There are lots of positives with the VLE, but no real evidence that these things will work, just hopes that they will"*.

There was also a strongly perceived downside to the communicative ease enabled by ICT, with comments on the potential for this to overwhelm individuals –

"It always fills me with horror, as a head of faculty who gets God knows how many emails a day, that students are going to be let loose on an email system."

This sense of lacking personal power in the face of rapid technological advance – *"computer volumes quadruple every year ...now it is dominating us"* – particularly affected attitudes to email use, with a sense emerging that this type of communication was an increasing *"burden"*. It seems this characterization was tutor-led, but students had also taken it on board and recognized how difficult it could be for tutors to deal with email volume. They commented that –

"I don't want to be another one of those emails taking up the tutor's time, just another student, just another statistic" and

"I know of a particular lecturer who said to us 'Please don't wish me Merry Christmas on email.'"

For their part, tutors suggested restrictions through a quota system –

"Emails should have credits attached to them. You can only use so many a day ... students can only use them in office hours."

These comments provide an interesting perspective on the idea, often viewed as a central tenet of e-learning, that it promotes enhanced interchange without constraints of time and space. In this context there appeared to be a consensus on the need for *"People talking face to face and less emails"*, although there was also some confusion about what now constituted 'face-to-face' communication. New definitions of this appeared to have crept in, as was evident in the exchange between respondents that follows:

"You can have webcams. Is that face-to-face?"

"Effectively, yes."

"When you stand in front of someone it doesn't make a difference whether it is a screen or not; it's the same information."

The issue of 'coping' with technology-driven change was seen as double-edged by tutors. The benefits afforded by ICT had already been sufficient to make teaching staff highly dependent on computers and the internet – *"If we gave away the computers tomorrow people wouldn't know what to do."* – while growing experience tended to make them more open to new technological innovations that came along. These innovations were sometimes embodied in external examples which provided encouragement and aspiration for further ICT use, such as the UCAS online system - described by respondents as an *"inspirational, exemplary use of the internet"* using *"elegant, well-designed"* software. Such examples of good practice clearly acted as catalysts for creative problem solving, and there were aspirations to replicate and apply similar solutions *"... to internal college structures such as the quality system."* It was clear that there was current and heavy engagement with ICT use by tutors in art, design and media, some of whom reckoned that 80% of their computer use was work-related. There was no sense that this had reduced workloads, however. In fact one tutor with extensive technical expertise noted that the rewards of ICT use were not evident in this respect, or at least not being claimed by colleagues – *"No-one does anything nice with the time saved."*

Slippery slopes ...

Feelings of personal prestige emerged as an important issue for tutor respondents. At its best ICT use could support and enhance this, and individual stories of ICT 'triumphs' were related – *"Putting my first Powerpoint together, and presenting it successfully at a conference, with no technical hitches."* Preserving the appearance of control and competence over ICT in teaching situations was a key issue in this –

"... it makes you look so much better, it makes you look so much more professional, so much more efficient, so much more knowledgeable."

Conversely, only being competent to use 'old' technologies was associated with loss of face – *"I'd be embarrassed to use a slide projector now"* - and further potential pitfalls were all too evident. One cautionary tale related the problem of -

"... incompatibility between computer and the host electrics or projector at conferences. I've seen one lady in tears, having spent her allocated timeslot trying to get her computer to work."

This type of blow to professional prestige was seen as difficult to overcome when occurring in front of students, but disastrous in front of one's peers. Despite recognition of the usefulness of computers, they all too often had the potential to make *"... competent experts feel incompetent."*

Personal and professional prestige also involved tutors' relationships to the institution in which they worked, with ICT access having become symbolic of status. The high value accorded to ICT in many institutional settings involved the idea of enjoying 'ownership' and personalization of the technologies involved, an expectation seen as reasonable – *"... [staff] want their own computers, and quite rightly so."* There was a high degree of prestige related to the idea of having one's own *"digital identity"*, so that *"staff can feel part of the institution."* This was particularly important for part time staff –

"... more people would prefer to have their own computer than their own desk ... more and more staff are asking for laptops ... it's also to do with feeling valued." (Composite of focus group comments)

Tutor/institution relationships could now be legitimized by staking a claim to digital rather than physical space. The status that institutions once accorded to staff by providing them with desks and offices was seen as replicated by recognition of their *"digital identity"*. The sharing of computer technologies, as previously in the sharing of physical resources, was thus seen as an indicator of being lower in the institutional pecking order. Having one's own computer hardware, software and an established virtual identity on VLE's, emails etc. was the contemporary equivalent of being provided with a comfortable and well-equipped office in the past.

Sliding into trouble ...

The threats posed to personal resources and personal security by computer use were an important topic of several of the focus groups, although security was more of an issue in some institutions than in others. Many of the problems related to ICT infrastructures *"crashing and losing work"*, a situation that *"can put you back for weeks"* and it was felt in several settings that more development was needed before trust in the current infrastructure could be merited *"... in this institution the server falls over too often ... if we are serious about e-learning they have got to sort it out."* It was clear that these threats to precious resources were very real to participants by the emotive language used to describe them, as in one comment that:

"I have deposited half my brain onto my laptop ... the thought of a virus attaching it is scary."

- and in the extension of the metaphor of health and disease to describe possible solutions *"... [if] you have a virus and crash, you should have like antibodies."* It was suggested that the 'antibodies'

might constitute services such as an automatic daily backup of files by the server. Both students and tutors expressed deep-seated anxieties in relation to this issue, with many descriptions of the “scary” and “nightmare” situations involved in trying to retrieve lost work, remember forgotten file names and locate expensive expert assistance to resolve problems.

However, there was another dimension to the anxiety expressed about coming under ‘external’ technological attack, and this focused on personal as well as work interactions with computers. Concerns were expressed about *“being electronically stalked ... receiving abuse”* from anonymous sources, and respondents discussed instances of this. On one occasion electronic tracking in a university had failed to identify an abuser, as *“...they traced it to an open access centre but MSN wouldn’t reveal who it was”*. The power of ICT to open up an individual’s work resources and life to possible outside interference, and the potential loss of control over these, led to feelings of anxiety and distrust. Personal security in computer use was a significant issue for students in many of the focus groups, with one student describing an undesirable intrusion through a programme download – *“... I let someone into my computer who started chatting ... [saying] ‘I’m a nice man’ ... and I couldn’t get rid of it....”* Another expressed more generalized anxieties in relation to widened exposure to external predators:

“Not everything is coming from one direction. When I swim in the sea it’s different from swimming in a pool ... in the sea you never know if a shark is coming.”

- **Drivers and motivators for ICT use and development**

Tutors across the focus group institutions described a wide variety of factors driving ICT use and motivating themselves and their colleagues to adopt e-learning. These included personal interests, institutional cultures around staff training, availability of external funding for developments and the influence of external professional communities.

Interests, options and appraisal

Focus group discussion allowed a picture to emerge of the kinds of institutional support offered to staff and the expectations being made of them in regard to take-up of these. This was very mixed, with all gradations between compulsory training for all in VLE/ICT use and totally optional programmes being offered. It is worthwhile considering the different outcomes that emerged within individual institutions as a result, as the following examples illustrate.

In one institution, external drivers in the form of teaching remission and granting of funding to purchase computer tools helped to progress one tutor’s e-learning development work. The work was sponsored by the university’s learning development unit, although the pursuit of personal interest in ICT seemed far more significant for the individual concerned. In this institution there was a programme of staff development offered to familiarise tutorial and other staff with the VLE (Blackboard) and with other aspects of computer use related to e-learning, but no compunction to undertake such training. It was the perception of staff that few colleagues therefore engaged in such activity. Wide diversity of experience of ICT was reported by tutors at this university, and individual expertise was seen very much as a facet of personal inclination and historical career circumstance. Expert colleagues within departments tended to spearhead developments, and their sharing of expertise tended to rely on personal goodwill between co-workers. There seemed to be few characteristics of particular subject areas that placed them at the forefront of e-learning development, nor was the established use of technologies such as computer aided design an indicator of this. For example, in one institution the fairly rudimentary IT skills that an art history tutor attributed to herself were nonetheless regarded as placing her far ahead of colleagues in other departments such as product design, fashion and textiles and architecture. Even the use of email for general communication purposes was hardly taken up amongst many colleagues. Conversely, a clear strategy for introduction of ICT into faculty activities had been produced at a second participating institution, and this related both to personal development for individual staff and the establishment of faculty-wide priorities. The staff appraisal system was used to support staff in engaging with five established stages in ICT training. This was described as *“effectively*

compulsory” reflecting the minimum skills level required of everyone and also enabling access to their relevant course areas on the Blackboard VLE. Faculty priorities for enhanced use of the VLE were clearly articulated in policy statements, so there was integration of personal professional development with wider institutional aims. The annual appraisal cycle was not sufficiently responsive to ongoing ICT needs to encompass all planning, however. There was a recognition that *“training needs come up more often than the appraisal system can manage”* with provision made for such requests, as well as *“regular technology updates”* for all staff. Overall, it was felt that the initial time and expense involved in adoption of ICT was justified in terms of the potential it offered to support and improve learning.

At a third university training was currently optional for staff, and it was reported that the VLE was used infrequently in the Art and Design faculty compared to the other two faculties in the institution. However, there was extensive use of ICT for learning *other* than VLE use, and we can assume that a perceived problem in its meeting subject specific needs was the demotivating factor here. Nonetheless, the institutional culture supported use of core technologies and ICT use was so ubiquitous that it had become the main means of information sharing and communication among faculty colleagues. There was a real danger that anyone without computer access (even temporarily) would be operating outside of this information loop –

“In terms of communication ... yesterday somebody didn’t turn up because their email wasn’t working and they didn’t know there was a meeting. We’re so reliant on communication with computers.”

This example indicates that cultural pressures can work to overcome the ‘optionality’ of ICT training, providing a ‘non-strategic’ but effective motivator for staff to gain the skills required for everyday communication and survival. The lack of an articulated strategy for continuing professional development in e-learning was about to be rectified, however, with respondents reporting that following recommendations from an external examiner such training was *“going to become ‘less optional’ fairly soon.”*

Following the money ...

It was not possible to determine any fixed pattern of institutional arrangements for staff development in ICT, although the trend seemed to be for an increasingly prescriptive approach to this on behalf of employers. There also appeared to be a growing role for centralized units which had a remit to develop learning and teaching within institutions. Several tutor respondents discussed the ways in which expertise, and funding to allow teaching remission and purchase core technologies had been provided through these developmental ‘hubs’. The support provided seemed to have been context-sensitive and pedagogically informed about the potential and implementation of e-learning, and to be welcomed by tutors. It is likely that the existence of this kind of support is predicated upon the ‘ring-fenced’ funding provided by HEFCE for learning and teaching developments, and it appears that art, design and media tutors are claiming their fair share of it.

Sharing professional experiences

An important motivator for ICT use among tutor respondents related to the potential for importing technology applications used in professional life into the educational context. This aspiration was strongly stated for curriculum areas such as photography, media studies and graphic design - all highly technologized practice fields. One example came from a photography and video course leader, who described new patterns of exhibition viewing –

“Recently ... I screened a video in a gallery ... and it was a completely different experience because with photographs a couple of people tend to be looking at your prints and then they wander off, whereas with this everyone was looking at your work at the same time.”

- an experience that illustrated the potential of shared technologies to break down barriers between professional and educational contexts and for “... *professional experience to be brought into teaching practice...*”

Strong motivators to ICT use were also seen to lie in the more general benefits to learning and teaching that came through increased access to resources, ease of management of administrative tasks and students' familiarity with relevant specialist software. These will be discussed below when e-learning itself is considered.

- **Equity and access**

This theme emerged strongly from the focus group comments made by respondents, and had several dimensions. These included the potential of ICT to address disadvantage, the equitable provision of support and training and the technological barriers experienced to ICT access/use.

Addressing disadvantage

It was reported that extended provision of module resources was enabled by the use of the VLE's as repositories of information (and it should be noted that it was mainly Blackboard that was being adopted). This had particular resonance for some groups of students, particularly those who found it difficult to develop more traditional academic skills. While all students appeared to benefit from the more relaxed atmosphere prevailing in lectures once the burden of extensive note-taking was removed, this was a very important move for dyslexic students. It was also helpful to tutors, one of whom described his previous situation in lectures of having “...*a battery of tape recorders in front of me.*”, a situation which most people who have encountered it recognize as intimidating. Not only were printable copies of notes and other information provided but other channels of communication than print were employed, allowing mixed media presentation with video and other visual material. Practical sessions involving video recording of 'hands-on' workshops and engagement with materials were also available as video recordings. The benefits of this are likely to go beyond the advantages offered to dyslexic students, providing opportunities to reference a wider range of learning styles and learner diversity.

Other views on this issue were offered, however, with one tutor noting that art and design students in experienced particular problems with literacy, and that they might find the predominantly written modes of IT communication difficult to address –

“... not that they're less intelligent, it's just that they have skills in other areas that are stronger ... some of them will be great in seminars ... I think that because we are humans and communication verbally and orally is natural, perhaps there will be things we lose with digital environments.”

Student comments on the provision of ICT for those with disabilities agreed about the valuable assistance this could give to students with dyslexia. However, it is clear that the system for accessing such resources needs careful management, as students voiced concerns about the potential for abuse of a system where free resources were provided. Some said they believed that abuse did occur, and that the money could be better spent in other ways.

Equitable provision of support and training.

Issues relating to accessibility for tutors as well as students were voiced. Sometimes there was evidence of shared aspirations for ICT upskilling, as in one institution where staff and students were unanimous in their wish to become more skilled and knowledgeable about computing. This spanned a variety of activities, including use of software and hardware - “*I wish I had more time to learn to use a Mac properly*” – and, on behalf of staff, a wish to understand the “...*background info and pedagogic theories re. e-learning....*” It was significant that users felt that more 'human' support was preferable, or wished that computers could at least take on some of the human characteristics of “*helpfulness*”, “*niceness*” and “*understanding*” that would enable them to develop their skills.

The inclusion of dedicated computer training in plans for staff development, especially where verified as part of appraisal schemes, seems to have ensured equality of access to ICT for staff working in those institutions. Best practice involved the ongoing provision and updating of hardware and software, which was attended to on a regular basis for full time staff. It appeared to be the case that in some contexts staff roles had a strong influence on ICT access; for example, “programme leaders” and “personal tutors” were specifically described as recipients of laptops in one institution and it was also recorded that staff new to the institution receive these. However, there were also contexts where the lack of clearly articulated expectations for professional development in ICT had led to a very patchy picture in terms of the overall expertise of tutorial staff. This was not necessarily because tutors lacked aspirations in the area, however. One respondent was at pains to stress that technological inexperience and little evidence of e-learning experimentation on the part of individual tutors should not be equated with lack of interest in learning and teaching. She described the attempts of some colleagues to deal with ICT as a “real struggle” that should not be viewed as professional complacency. She also noted that the process of gaining and using such expertise was a significant addition to workload –

“It looks like a lot of extra work. Part of me wishes I could do it, but I’m a bit scared ... because of the work that will be involved ...there are a lot of people who are just like me, or even less versed [in ICT] than I am”

The problem of workload accumulation was also discussed by tutors at another, with comments that *“We accumulate more responsibilities and more work because of the technology.”* and that *“... the biggest problem [in ICT use] is getting time to set it up.”* Some of the perceived benefits of e-learning were thus assumed to be in store for the future, while the current situation was characterized by the difficulties of accommodating up-skilling and resource-building into already crowded schedules. Problems of time, skills acquisition and workload were seen as significant barriers to e-learning development and it seems sensible to suggest that these can only be addressed in relationship to institutional infrastructures. It also appears that institutional strategies for e-learning need to be articulated clearly at all levels if individuals are to understand and act on the contributions expected of their individual roles.

Another issue about staff training emerged that is of particular relevance to the subject sector. The high ratio of part-time staff teaching in many art, design and media courses was seen as significant in e-learning terms in its impact on the respective technological access afforded to full and part-timers. Full-time staff tended to be the majority of respondents in the study, but they noted that up to 50% of teaching colleagues were part-time. They voiced concerns that part-time colleagues were frequently not offered computer access by institutions, and as they often failed to check emails on internal networks communication problems arose. Even where there was evidence of clear policies to provide all full-time workers with ICT access, it appeared that this was not regularly extended to part-time teaching staff.

Technological barriers to ICT access and use.

Barriers to tutors pursuing effective e-learning strategies related to the complexities of the technology involved, in particular to the multiple components that needed to be mastered in setting up an electronically-enhanced learning environment. Fear of lacking control over resources was cited as a reason for avoiding innovations in teaching, and one tutor looked forward to a time when all the learning technologies within the classroom could be fully integrated, rather than the current situation. Tutors reported that currently they had to deal with a laptop, finding a phone point to plug it into, obtaining the correct wires and leads and so on, often in rooms with which they were unfamiliar– *“If we just had to learn how to use one thing!”* Complexities of a different kind discouraged even the more technologically-oriented because of the plethora of computer operating systems available. Incompatibility between systems was a key disincentive to ICT use, with the lack of interoperability between PCs and Macs providing access problems for many student users. It was suggested by respondents that voluntary networking of personally owned computers and easier, wireless internet connections could offer desirable solutions. Visiting lecturers provided a

particular problem to full-time tutors in respect of the compatibility of their personal resources with institutional ones; for example, one programme leader found that the CVs they sent in frequently could not be opened without *“going to the IT man”*.

It was clear that more recent developments, particularly the adoption of institutional VLEs (again, it was notably Blackboard), had simplified ICT engagement for staff. In one university the uploading of information onto a previous VLE had involved tutors having capability in HTML applications and required either *“...web training or support to help them put up the information [which] was too cumbersome for the needs of the art and design faculty”*. Technological innovations had thus bypassed many of the skills formerly demanded of tutors in the performance of similar tasks and allowed them relative ease of access – a process that we can anticipate will continue. In most contexts the technological infrastructure continued to develop to accommodate new demands, as in the introduction of a wireless network seen as a particular benefit by staff. This had helped to overcome earlier barriers to effective ICT use, including *“...teething problems such as not having enough cables to connect to the internet to check your emails.”*

Students experienced the introduction of ICT as beneficial to their learning, making regular use of information held electronically. However, they reported their experiences of finding parallel sites holding relevant learning resources, which had different modes of gaining access. For example, in one institution students reported that information on *“the server”* could only be accessed from within the college, while that on the Blackboard VLE could be accessed from home. However, this group of student respondents recorded that they did not use the ‘official’ VLE much – *“We just go through a file system on the server”*, an inconsistency in information access that seemed to be subject-related. This instance pointed to an important issue that seemed to be related to the degree of subject-specificity of learning resources, and students noted that for their course the main *“wealth of information”* was server-housed and that tutors directed them to these by including their details in assignment briefs. There was a practical reason for the ‘housing’ of materials on the server, and this related to the space allocation required by art, design and media students. Students were each allocated 750mb of space on the intranet in order to store their work, which accounted for their propensity to favour it as a file storage system. In light of this, the storing of briefs and other resources here was a logical choice, despite the restrictions on access involved.

It will be important to consider these subject specific needs as we move further towards electronic and blended learning environments, and to include such requirements in institutional plans for digital accommodation. The financial investment needed to support innovation was a related theme, and these costs were seen as the main barrier to technology access at one university. The nature of the subject areas undertaken made updating a particular problem, and it was noted that *“Faculty budgets need to expand to keep up [with technological advance].”* Issues about the quality of student work were directly linked to this financial investment by respondents, and they noted that *“...the link with quality is origination. What are students using to take photographs in the first place? What printers are being used to produce work for exhibitions?”* High quality, high investment technologies were thus seen to be required at all stages in the process of student work, with results highly dependent on access to the correct equipment.

A similar theme about perceived relationships to specialist art and design needs emerged in student comments on access to technical help. Despite the acknowledgement that several routes to this existed in institutions there was a distinct preference for securing support from those with subject expertise. Students provided one another with extensive peer support, confirming that they solved most of their software problems by talking to each other. Beyond this, lecturers were the first port of call for additional help and then *“...technicians based in art and design...”*, while none of the six student respondents in this group had ever contacted the general *“technical help desk”* that served the whole institution. It appears that the art and design context both posed the problems to be solved by students and provided the specialist expertise to resolve them.

A wider picture ...

Focus group discussion at one institution made strong reference to issues of equity and access to ICT within and beyond the confines of the university itself. It was regarded as important to educate university members and other users more fully in “*responsible*” use of ICT and to consider the ethical issues around access to computers across developing countries. Comments on this point focused on the need to recognize the “*exclusion*” of those without ICT access and for the privileged, technology-rich nations to share resources with others. They also included environmental concerns connected to the consumption of electronic resources, as in the need to develop better forms of “*biodegradable technology*” and to give serious consideration to whether the current pace of development was sustainable – “*You really need to weigh up what’s needed.*” This issue of the importance of determining “*need*” over “*want*” was a theme picked up elsewhere, and it was considered that a balance needed to be maintained between finding the best uses for computing versus making ‘blanket’ use of ICT whether appropriate or not; this was seen as an important issue in the planning of learning activities, which could disadvantage some people if exclusively envisaged as technology-based. The seriousness with which all of these issues were discussed indicated that ethical debate on technology issues was a priority for both staff and students in art, design and media.

- **Perceptions of learning and the impact of e-learning**

A number of key issues emerged from respondents’ comments on their views of learning and their descriptions of the key activities and preoccupations that engaged them in its pursuit. These included insights into the ways in which knowledge was managed, developed and distributed in their settings, and how this was aided and constrained by ICT. There were also significant comments on the relationship of ICT to subject specialisms and to the skills and understandings required for these fields.

Archiving and resourcing

Students were described by tutors as benefiting directly from the information-handling capacity of ICT in general and the Blackboard VLE in particular. Although not explicitly referenced, a cognitive or ‘symbol-processing’ perspective on knowledge and learning frequently appeared to be adopted by tutors. They therefore envisaged the positive capabilities of ICT software as enabling the “*chunking*” of information and subject knowledge, although they simultaneously held a wider picture in mind than just the idea of learning as a form of data processing. For example, the ease of information storage and retrieval enabled by VLEs were predominantly valued for its ability to provide learners with a flexible and accessible repository of relevant resources. Tutors frequently expressed satisfaction with the expansion of resources and archiving of knowledge that they were currently achieving, and they viewed this as a crucial means of supporting learning. They also indicated their implicit belief that traditional views of knowledge ‘transmission’ could be well served by new technologies; for example, one tutor expressed satisfaction that electronic archives of resources that were of benefit in “*... successfully passing on knowledge to students, but using technology to do it...*” and saw the portability and instant access to these resources as especially valuable. This enabled a new level of immediacy and responsiveness in teaching, which was described by several tutors –

“... using digital projectors and software such as Powerpoint or iPhoto, you’ve got your whole slide collection with you the whole time ... People ask you a question [and] you can demonstrate it immediately. That’s a huge bonus.”
(Composite tutor comments)

The discussion among tutors and students at Institute D confirmed that views of the term ‘e-learning’ were predominantly shaped by the idea of enhanced resources being available. Although seen as superior in range and accessibility in comparison to traditional libraries, the idea of the ‘e-archive’ was the main point of reference, as the following comments illustrate:

"E-learning is essentially a library"

"Libraries and books are getting out of date ... e-brary"

"It's a virtual library. You can have all the Harvard referencing."

Tutors believed that the demotivating effects of unsuccessful library searching in the past, where students *"...come up against a brick wall..."* that leads to their disengagement with learning, had thereby given way to a more positive situation, with one commenting that -

"I'd like to chunk things [information] further. The benefit of that is that I envisage using Blackboard as a repository whereby you could present a student entering onto the module with sufficient information for them to be able to engage fully...."

Students associated these new repositories of knowledge with their ability to gain autonomy in learning, although their accessibility and value was enhanced where tutors had pre-selected a range of relevant resources to which students were specifically directed through assignment briefs. These were regarded as very valuable and included examples of earlier student work for similar assignments, resources such as video clips, links to websites and storyboards. Access to them was seen to allow for a new independence in learning - *"... so you don't usually have to trouble tutors for much."* A project in one institution had enabled new perceptions of technological potential to develop, explained by a student as follows -

"... [the interactive whiteboard] it's just used as a projector more often than not. The actual interactive part, we don't use ... but my project is to design a working interface for a touch-screen booth, so I'll use the interactive whiteboard to show how that would work."

Here the integration into project work of new technologies allowed for creative innovation and development of new applications, as well as a fuller appreciation of an existing resource.

In one group students voiced requests for additional e-learning resources, with a particular demand for lecture notes to be made available on 'their' server. They recorded that *"... there are other courses where all the lecture notes go onto the server."* but said this was not the case for them. It seems likely that this problem was related to the fact that they were accessing a different platform from other students, in that ADM students had good practical reasons (notably that of server 'space') for regarding the institute server rather than the VLE as their electronic 'home'. However whether lecture notes were available on the VLE, server or elsewhere, such comments were fairly common and substantiate the need for service integration and the desirability of providing single access points to resources. This was underlined by the clear rationales that students gave for having online repositories of learning materials. The first related to flexibility and independence in learning, with a comment about the desirability of lectures being a time-shiftable resource - *"There are times when people can't make it to lectures"* - and the second supported points made in other groups about the desirability of deepening understanding rather than honing recording skills - *"I can't write and listen at the same time, so audio [archives] would be best."* Both of these aspirations appear to accord with current trends in higher education, and can be technologically assisted in the ways that students recognized.

Other than resources that archived specialist subject knowledge, tutors also referred to electronic resources that support learning in more generalized ways. For example, they described the potential of e-learning to enhance students' access to course information such as module and course descriptor documents, particularly through VLE use. In one context they outlined plans to extend current use of ICT by keeping computer copies of *"individual learning plans for students"* and other personalized files. Although a move to 'online' tutorials was still anticipated for the future, *"recorded tutorials on their laptops"* were currently a favoured form of tracking student progress here. Learning was seen to be substantially supported by the potential for enhanced communications at all levels, from institutionally to internationally. Staff therefore exploited the 'notice board' and other communicative aspects of ICT, as well as the administrative and managerial opportunities provided in software such as *"planning tools, [for] calendar and workflow"*. In these descriptions there was recognition by tutors of the ways in which diverse technologies

supported different aspects of learning in art, design and media higher education, and they adopted a critical perspective on ICT tools as commodities serving the functions of diverse markets. The PC was described as “a *personal, individual commodity*” (despite its saturation of the lucrative education market) that promoted administrative, archiving and publication functions, while the Mac computer was seen as a crucial resource for more vocationally referenced learning.

Developing and distributing knowledge

Teaching staff across all contexts demonstrated clear perceptions of the capability of e-learning to change learning interactions and relationships. For example, one tutor at Institute F commented that

“To me what underpins e-learning is switching an emphasis from knowledge that’s held by teachers who teach, to the sharing of information where people learn because they interact with the information. And that philosophically is a massive shift, and it’s also where the biggest resistance comes.”

It was evident that there were different degrees to which this shift had taken place in the respective institutions that informed the research, and that the ‘blend’ of traditional and technology-enabled learning was individual to each. Tutors agreed that “*The uptake of e-learning seems to be patchy in art, design and media*” (comment at Institute F), a diversity reflected strongly in the research data. For example, at Institute A different patterns of engagement between tutors and students were reported as having developed as a result of the introduction of e-learning. However, e-learning was envisaged here as supplementing established activities such as seminars, lectures and tutorials, with no loss of face-to-face interactions reported as a result. Indeed, among the positive effects of ICT on students’ learning it had been noted that there was increased attendance at face-to-face sessions, and that students showed enhanced proactive engagement with discussions in the course of these. One tutor believed that students studying the modules he taught were engaging more fully than previously with the range of resources he supplied –

“When I used to hand [articles] out as a photocopy hardly anybody used to read it and hardly anybody brought it [to the lesson] ... on Blackboard I was really surprised that the vast majority of them had read and had all copied it. I think it’s something to do with the fact that they know you’re actually doing something for them so they feel that they’re engaging.”

It was also reported that with the pressure of extensive note-taking removed from lectures all students tended to show increased understanding of the issues discussed, asking more questions in subsequent face to face sessions and referring to more complex ideas in work submitted for assessment. One tutor reported “better seminars” in terms of increased participation in discussion and in students’ improved critical review of ideas as consequences of opportunities offered by e-learning.

However even within the same institutions conflicting views prevailed, with different perspectives on learning leading to different perceptions of the usefulness of e-learning. Another tutor at Institute A, who saw learning as predominantly socially constructed, questioned whether computer use could adequately replicate this social experience. The loss of “...*the human dimension...*” that she saw as present in face to face interactions and particularly in group learning activities was a matter for regret to her. Privileging collaborative learning and “...*knowledge built through interaction with others ...[as] more than the sum of its parts.*”, this respondent feared the loss of more subtle, implicit learning opportunities –

“...students who perhaps are weaker in the group suddenly have almost a light bulb come in over their head when they hear somebody else ask a question or answer a question ... You might get shy students who aren’t so socially adept, but if they’re able to take a back seat for a while and see students who are more ... adept, they might pick up skills. When they go for interviews or they’re mixing in with future colleagues in the workplace, they need to have these skills in place.”

The potential for loss of these 'transferable' skills led this tutor to feel ambivalent about e-learning. Although initially indicating that she preferred to restrict ICT use to the handling of "*...basic information, induction type information...*", she agreed that it had the potential to make some face to face sessions more effective learning activities, and reported her own improved practice as a result. These comments came in her reflection on the use of Powerpoint software, which she recognized had led to improved structure and coherence in her lectures. She believed that she had become more discriminating in selecting visual material for inclusion, which enabled her to personalize her lectures more and to "*...go much more into depth, more slowly and coherently ... I do realize I've improved so much from Powerpoint being the medium*".

A pilot project in one institution was about to put some of the concerns mentioned above to the test; staff here described their involvement with a new master's course due to be delivered entirely online, which was seen by as likely to bring in other opportunities for innovation. It was also thought that it would help resolve other concerns; these included clarifying the distinction between e-learning and distance learning helping establish optimum levels of face to face interaction and determining whether the need for a physical learning space would endure – "*Decentralize the learning and the uni may not have to exist.*" One student involved in this discussion made a strong case for the need for continued face to face meetings with tutors, and made a significant point that international students may have a particular cultural requirement for this. It is likely that there will be variations across different student groups in this respect, and tutors voiced their commitment to using a variety of means and channels for their teaching – "*As a tutor I think you need more than one form of communication.*"

Another point that emerged here was the need to support the growth of digital communities as an evolving form of ICT engagement -

"In terms of emailing each other perhaps we could have less peer to peer and more community emailing ... less about 'MySpace...'"

and (presumably) more about 'OurSpace'. This type of communication was also seen as a way of reducing the 'burden' of increasing volumes of personal email. Further key issues that respondents agreed would support e-learning developments were identified as greater stability in platforms, interoperability and compatibility between different systems, increased speed and improved filtering devices for email. Students were also beginning to realize the importance of self-regulation in ICT use, with one establishing her own protocols for security, archiving and data management. These included:

"Save your work before. Start working from beforehand. Every week go for a virus scan."

Students appeared to agree that in many respects ICT use brought learning benefits, and the familiarity with computer technologies that they described as part of their everyday lives and leisure stood them in good stead in dealing with new means of interaction. This technology-readiness meant that for some aspirations outstripped reality; they were dissatisfied with university ICT provision and commented that their expectations of access to 'state-of-the art' technologies at college had been unfulfilled, particularly in terms of the 'speed' of internet and server use. However, they generally seemed to be making good use of the facilities provided. For example, one group described the routine use of email in communications between themselves and tutors, and saw this as having the potential to support group work –

"When we've got a piece of work that we're all working on as a group, then usually if I have an idea I'll email that to the tutor and he'll distribute it to everyone else in the group."

Email addresses were not shared between the group (this may have been because of data protection concerns, and staff anticipated that all students would have college email addresses in the near future) the tutor had to act as a central distribution point for ideas contributed by different group members. As this probably involved an unnecessary increase in tutor workload and a barrier to spontaneous communication of ideas between students, the aspiration to redress the situation

for the future was merited. Generally it appeared that the flexible means of communication between staff and students offered by email was being exploited, although there was concern that in this technological use, as in others, students sometimes needed to be motivated to use the email system. Lack of engagement with emails could usually be seen to lie in the nature of their content rather than in students' technological inadequacy or apathy, as one tutor noted -

"A lot of [colleagues] say it's no good emailing students because they don't look at their emails. My argument is that ... [it's] because the stuff that people give them is really dull. They're all fantastic at using mobile phones so I think that it's a complacent myth that they don't or won't use technology. It's when it's worth their while."

Elsewhere there were instances of students using a sophisticated mix of technologies within a blended learning environment. This example involved them in face to face meetings, the development and recording of work on an interactive whiteboard and the subsequent seamless transition of this resource to an online format. The technology involved was called the 'learning grid', and it had shown positive collaborative benefits. One tutor commented that -

"What it seems to do is encourage a very mature attitude to learning ... students organize learning groups. They book it out, a group of them to do a project. And they'll go and sit with their whiteboard and brainstorm, and do their project online as a group."

Technological interactivity was a key value pervading the positive experiences described, with expectations of e-learning being enhanced by demonstrations of good practice that staff and students had been involved in. One significant instance described by students had involved the use of podcasts and a webcam, and enthusiastic reactions led to the following comments -

"The best lecture I had was one with the director ... talking about the music production with the composer, using a webcam."

"I am converted to podcasts after that lecture."

"It was an incredible demonstration of the technology."

"It was all online. They were actually sending things backwards and forwards ... actually web conferencing; there was barely any face to face."

The benefits of this type of interactive experience being recorded were also noted, with one student commenting that *"With a podcast you can give the lecture the attention it needs. You can keep going back."* - sentiments similar to those found elsewhere in the view that learning technologies can relieve the pressure of 'recording' information, enabling more in-depth student engagement and understanding. One tutor was also about to pilot an online peer assessment tool, designed to support group activity as well as *"...save staff time and provide students with feedback they wouldn't normally get."*

Despite the positive experience of planned collaboration that students across different institutions reported, and the potential for developing distributed knowledge networks through group activity, some of them described a very different context in undertaking individual work - *"When we're doing assignments for our course which are all individual we don't really use it [i.e. email/forums]."* This situation pertained despite students' technological sophistication and familiarity with ICT, and provides some interesting insights into their perceptions of e-learning. It may be that the very 'everyday-ness' of communication technologies dissuades students from perceiving of them as useful tools within a formal learning environment. At the very least it indicates that the learning potential of familiar applications such as email and discussion groups needs to be clearly articulated for a context. It also appears that their use needs to be embedded in the structure of planned learning activities and that students' attention should be specifically directed to the applications that they are expected to utilize.

ICT and subject specialisms in art, design and media

There was abundant evidence that tutors and students made extensive use of ICT to pursue work in their specialist subject areas, and that the preferred hardware in art, design and media courses was the Apple Mac computer. This preference related strongly to the uses made of ICT, for example in using *“computer software for college projects – word processing, design programmes.”* (Student comment at Institute G). The support offered for essential software by the Mac was the main reason for its position as first choice of hardware, as was its ubiquity in professional design contexts. One tutor noted that –

“[the Mac] ... is the industry accepted kit. The software is better suited to that machine, it’s a more stable platform for software than the PC because they don’t crash.”

The software for which Mac computers provided this stable platform, and which was regarded as crucial for subject-specific ICT use, was the Adobe Creative Suite – i.e. Photoshop, Illustrator and Indesign. Students confirmed their shared expectations of using such software for art and design, which one summarized as follows –

“[I’m] using software like Photoshop, Illustrator, Powerpoint, Excel, Word, iMusic, iPhoto, scanning, internet and email”.

It was common for them to gain access to these applications in a college area dedicated to Mac use, in which resources at different levels of complexity were arranged; sometimes adjacent space for learning and teaching activities was also secured, as reflected in the following comment –

“At one end of the Mac studio are low level Macs and at the other end high-end ones ... the middle of the room has a cordoned-off area ... [providing] a flexible workspace.”

Some students reported that their Mac use was pursued in more distant technology suites that were shared with students from other courses, such as the “FLA, the Flexible Learning Area ... we go into it to use the Macs”, and many of them owned their own hardware and software. There seemed to be a mixed picture emerging in terms of how far ICT had been imported into core teaching spaces for art, design and media. This is unsurprising as the first wave of computer acquisition in higher education institutions tended to sequester these expensive resources together within dedicated technology suites that could be more easily secured, managed and staffed. There were clear indications, however, that core learning technologies were in the process of being distributed across institutional space and increasingly integrated into established teaching areas; some teaching staff still voiced this as a distinct aim, while others had moved closer to fulfilling this aspiration.

It was reported that students regularly and extensively undertook work in their own homes, an important learning environment for them and one which may be seriously under-researched. Problems of compatibility between home and college computers often interfered with progress, as comments by frustrated students illustrate –

“I don’t really use the college computers at all because I’ve got my own laptop at home ... most of [them] are Macs [so] there’s not compatible files with my one at home.”

“I use PC’s because I prefer them anyway but then its just the effort of ... I can’t save it [Mac work] on my memory stick because it’s only compatible with PC’s so ... it’s just a hassle.”

In terms of tutor use, indications emerged that PC’s were predominantly serving administrative, course publication and research functions. These were used to support learning in more general terms - for example, *“email, spreadsheets, letters, reports, internet, intranet, research”*. The other major activities supported by tutor use of PCs related to ‘student-tracking’ activities that have both a record-keeping and developmental aspect, as part of the agenda for personalization of learning coming through personal development and planning activities. Conversely, the ‘industry standard’ tools enabled by Macs served to deliver the specialist, subject curriculum which in art, design and

media has clear vocational references. One student expressed the dichotomies of the situation as follows –

“There’s Macs and PCs and I can’t understand why there’s not one personal computer that does everything, and not ... Macs are just for design and PCs are more on the business side.”

Learning was also being pursued by exploiting the potential of multimedia technologies. There were numerous instances cited of students being introduced to the work of eminent and less well-known practitioners in this way, and these opportunities were especially valuable in enabling them to hear the professionals in question talk about their achievements. For example, a multimedia resource for jewellery and fine metal working provided “... short clips of artists talking about their work. We’re using it as part of an e-learning resource that’s going to be a DVD.” Course staff working within institutions were also using multimedia applications to improve the delivery of practical skills sessions –

“If you’ve got a face to face situation with thirty students crowded round one area where you’re doing a demonstration, 75% of them are at a funny angle, don’t see it, are standing behind someone. But with an overhead camera filming in a mirror on Moodle [VLE], that student can go to look at it any time they want to.”

Tutors in the study noted that the uptake of e-learning, and of computer use in general, was unevenly spread across the wide range of art, design and media disciplines. In one institution it was noted that media and visual communication courses had taken most advantage of the opportunities offered; however, in some fields the available technologies had by no means proved their worth in supplanting more traditional materials and means. Fine art was one instance cited –

“There’s virtually no e-learning in fine art. Theory that supports fine art, yes. But in terms of fine art practice, studio based practice, I’d go further and say there’s quite a high level of resistance. The potential hasn’t been explored.”

It was difficult in this inquiry to account for the situation in specific subjects, due to their range and variety; further research will therefore be needed to substantiate such impressions. However, it is sensible to assume that progress in adopting e-learning will be delayed where available technologies fail to match a subject’s core aims, media and outputs. Incentives for technology use have to be apparent to users, and may not be so evident to those in fine art and related areas.

Having said that, many of the advantages that tutors perceived in ICT use related to enhancement of capability in symbolic representation, for example in the ability of software to support learners in constructing “projections into the future” and virtual prototypes of their designs. This kind of digital representation facilitated the design process by synthesizing the diverse areas of expertise once required to develop design prototypes, cutting down

“the production process in general ... the transition from hand done to computer based design ... from fourteen people handling an exhibit to two.”

and providing opportunities for fine-tuning of designs that were previously unavailable – i.e. “... the ability to change and tweak endlessly.” and “just to make it visually better.”

There were particular benefits noted where the technology related to specialist or niche concerns, as in the description by one media tutor of an audio application –

“This particular thing I was teaching, ‘dither’ - being audio it was very difficult to teach because it’s just this really tiny analogue sound and you can’t see it. But I found all this stuff on the internet where people had taken all these audio examples, pictures of the dither, audio examples of the dither, and I collected all this stuff together and it was just brilliant. I thought, ‘I can really teach that well now.’”

The idea of 'dither' may be unfamiliar to many of us, but it is clear from this example that the tutor had found resources that supported his effective symbolic representation of the concept to students. A useful crossover of sense-based channels of communication also appears to have been effected, as noted in his further comment that, *"This was particularly interesting because it dealt with the issue of tactility, obviously an intrinsic problem with trying to teach audio."* The development of effective means for representing tactile experience in the digital domain is a significant challenge for e-learning in art, design and media, and local innovations such as these provide an important contribution.

However, even the 'matching' of technologies to subject specialisms brought concerns as well as opportunities for respondents. Despite recognizing how subject-specific innovations could support learning, tutors and students voiced ambivalence about their impact on art, design and media fields. Most of the potential benefits were recognized as functions of software that had been developed for industries that were intended student destinations on these predominantly vocational courses. Conversely, significant threats to the quality of learning and student achievement related to the dilution of subject specific skills, and this was seen to be exacerbated by the 'mass' availability and more general use made of such software.

Tutors' perceptions of the disadvantages associated with ICT use involved concerns for the quality of student achievement in specialist areas, and the potential for student under-skilling as a result of technology dependence. They recorded their views that *"technology introduction into studios and courses had ... devalued work ..."* and these concerns related both to the quality of student achievement and to the decreasing pride in their work that they perceived students to take. There was some disagreement and debate about this however, with photography and graphics tutors in particular voicing worries about the issue of *"...standards ... slipping as a direct result of the technology ..."* Problems were seen to relate to students' unrealistic expectations that technology would 'do everything' for them, to their lack of background in and understanding of traditional processes at the core of disciplines (e.g. darkroom processes), and to the constraints that an exclusively digital range of activity might promote – *"There's an issue in graphic design that the screen will define a student's entire graphic design experience."*

Technicians and lecturer/technicians were less convinced that these issues were an outcome of technology advance, however, pointing out that, *"I don't think that's actually the fault of the technology"*, and that *"[the computers] ... are only as good as the person that's operating them."* Agreement was ultimately reached within one focus group that courses needed to promote a more 'professionalized' use of ICT to students by providing the *"skills bridges"* needed for them to operate as specialists, an activity that also involved *"honoring the raw availability"* of technological applications. This was seen as crucial in enabling students to gain professional levels of expertise in the current context, where -

"... anyone has access to the technology now, and that is reflected in what is being produced by the students... whereas previously it had been used to teach a very specific vocation that used equipment unavailable to the masses".

There was evidence that this was a topic on which tutors and students were in agreement. For example, several students at Institute G commented on the capability for ICT to *"ruin things"* within their specialist fields by providing consumer software that replicated the skills that were once developed by subjecting existing 'talent' to intensive training. It is worth recording a few of these comments here to indicate the depth of feeling that the issue raised:

"...[software like] the Illustrator files ... means that anyone can do it, and I know that that's the appeal, but if you've got a talent for it ... and if everyone can use these programmes ... then what's the point in having a talent?"

It's like losing your handwriting, losing your style – everything becomes homogenous ...

Someone that can't draw a twig is becoming the best fashion illustrator out there...

I'm all for making things easy, but it's taking the joy out of some things."

Not only were non-artists and non-designers edging into specialist fields, but students felt that more traditional skills and their own innate talents that were unrelated to computer technologies were being undervalued. One student gave a telling example:

"We have the people that are very good at doing the flats hand-drawn and they're told – I mean I understand for the course that we have to learn it because it's so in fashion to use computers and we're moving forward – but people who are naturally good at doing the flats, then they have to do it on the computer and they struggle. They get bad grades and they don't perform as well as what they've got naturally. And I think there should be more choice and there should be more openness to not having to use technology for everything."

In considering these comments it is important to clarify that the context in which students were speaking was one in which most of them had willingly adopted ICT use for leisure and work-related activities. They were by no means 'e-luddites', and many had expressed positive sentiments about the personal acquisition and use of new technologies. The level of concern exhibited indicates the serious commitment that students in art, design and media brought to their studies, adopting a critical and questioning stance on their new technological situation. Maintaining the distinctiveness of specialist skills against this background, and in highly technologised subject areas, was a challenge that tutors and students had jointly identified and were preparing to face.

7. Conclusions and recommendations

It is clear that ICT-related activities are a significant feature of the higher education landscape in art, design and media and that the sector has identified and continues to develop its relationship to core technologies. Redefinitions of key educational activities have already occurred or are currently taking place, and there is a high investment of time in ICT-related developments. A number of significant points emerged in the study, and conclusions and recommendations will be considered under 3 key headings: the change potential of ICT in art, design and media; identification of specialist needs and opportunities; training and professional development of staff.

- The change potential of ICT in art, design and media

An issue emerging from the research is the potential of e-learning to change key processes, understandings and activities associated with these disciplines. This type of change rests on the potential for structures of thought and action to be redefined within distributed learning environments that are technology rich. It may extend, as the literature suggests, to new definitions of intelligent practice and to the loss of traditional areas of competence. There is already evidence that much of the activity for which ICT is currently being used in art, design and media (as elsewhere in higher education) is associated with the publication and dissemination of information and with communications via email, discussion forums and so on. They therefore involve a communicative mode that is predominantly verbal and written in nature. The technologies involved provide powerful support for particular kinds of engagement and respondents in this study recorded their extensive use of the PC, which tended to promote administrative, archiving and publication functions.

However respondents also recorded high levels of use of the Mac computer and the software for which it provides a reliable platform; these specialist applications add another dimension to the text-oriented capability of mainstream ICT solutions and are a crucial resource for more vocationally referenced learning. They provide the main technological tools for delivery of the subject specific curriculum in many areas of art, design and media. There is a downside to this, however, with the ubiquity of these technologies leading to widespread concerns within the sector about potential downgrading of the kind of learning that comes through making. This point is brought out in the literature and was supported by respondents in the research. Tutors expressed concerns about the quality of student achievement in specialist areas, and the potential for under-skilling as a result of technology dependence. For their part, students were concerned that more traditional skills and talents unrelated to computer technologies were being undervalued; they also worried about the encroachment of non-artists and non-designers into specialist domains. These challenges are put into perspective by comments in the literature about the inevitability of our use of available technologies (Salomon et al., 1991) and the likelihood that perceptions of intelligent practice will change. New ways of deploying specialist capabilities are emerging, and the new sets of skills that are required for them.

- Identification of specialist needs and opportunities

A picture emerged of subject specialist needs and activities under these new conditions. There was evidence that respondents were using the digital environment to pursue traditional art, design and media activities in a new forum – for example by using ‘online crits’, ‘digital portfolios’, ‘electronic presentations’ of work for assessment and ‘submission of online critical reviews’. However, it is important to remember that despite evidence of take-up of these extensive opportunities, almost half of respondents had yet to exploit them at the time of completing the survey. This may be partly explained by tutors’ perceptions of the most valuable environments for promoting learning. Studio and workshop spaces were ranked highly, as were seminar and tutorial rooms, but these spaces were much less likely to be resourced with core technologies than staff offices. There were clear indications, however, that core learning technologies were in the process of being distributed across institutional space and increasingly integrated into established teaching areas.

A key use made of ICT related to its ability to enable enhanced interactions with professional destinations. For example, multimedia technologies allowed students to be introduced to the work of eminent (and less well-known) practitioners and to hear the professionals in question talk about their work. Subject-related websites, electronic databases and the websites of professionals in related fields also provided opportunities for such interactions, supporting students' developing participation in relevant communities of practice. Apart from such outward-looking activities, staff were also beginning to experiment with in-house use of multimedia to improve delivery, for example by recording workshops and practical skills sessions. Nonetheless the uptake of e-learning, and ICT use in general, was unevenly spread across the wide range of art, design and media disciplines. In some fields the available technologies had not yet proved their worth in supplanting traditional materials and means, and Fine Art was one instance cited. Many of the advantages that tutors perceived in ICT use related to enhancement of capability in symbolic representation, however, and this clearly offers opportunities for all art, design and media fields. There is a caveat here that was pointed out both by study respondents and in the literature, and that is the potential for ICT to 'mask' and render invisible the processes of making. Schenk (op. cit.) notes that this can affect learning by making 'professional processes' less recorded and less available to the learner's view than they once were. It seems appropriate to suggest that we use the better means of recording 'process' offered by ICT and that we integrate these records into learning activities.

The issue of securing specialist art, design and media knowledge leads to another consideration that emerged from the research. This relates to the higher demands on ICT space made art, design and media programmes, making it important to consider subject specific needs and to include these requirements in institutional plans for digital accommodation. The technological incompatibilities that were also a major focus of concern for study respondents have the potential to limit access to e-learning, and need to be addressed. It appears that the institutional adoption of VLEs has helped to simplify ICT engagement to some extent, but we still seem to some distance from the goal of 'single portal' access to all applications.

- Training and professional development of staff.

The problem of finding ways to support continuing professional development for staff in ICT use was a key issue emerging in the research. It was not possible to determine any fixed pattern of institutional arrangements for this, although the trend seemed to be for an increasingly prescriptive approach on behalf of employers. There also appeared to be a growing role for centralized units which had a remit to develop learning and teaching within institutions. A more equitable distribution of staff training emerged where institutions had clearly articulated expectations in this regard, particularly where these were linked to strategic aims and to cycles of staff review and appraisal. This is unsurprising, of course, but in higher education there has often been a focus on individuals exercising their own preferences in regard to professional development. However the current situation is already placing high demands on all lecturing staff, and it would probably be beneficial for institutions to describe the competences expected and the ways in which they will support individuals in achieving them. It is significant that respondents in the study described their need not only for 'training' in ICT use and applications, but in the more complex areas related to e-pedagogies. There may be a role here for national organizations such as the Higher Education Academy to develop and disseminate a coherent set of principles for e-learning.

Problems of time, skills acquisition and workload were seen as the major barriers to e-learning development by staff, and it seems sensible to suggest that these can only be addressed in relationship to institutional infrastructures. The training and access to ICT resources of part-time staff is of particular relevance to the sector, with its traditional high ratios of part-time to full-time tutors; if e-learning is to realize its potential in the sector this significant part of the workforce will need to be included in the development of best practice.

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Appendix 1: Distributed e-learning in Art, Design and Media Phase 2 research

A Guide to Case Study Research



E-Spaces: ADM-HEA research into distributed e-learning in art, design and media

Innovation/Development Projects

Rationale and context for the activity

The modern world is dominated by technological developments, the learning potential of which is increasingly recognized. This potential is enhanced by the attractions that new technologies offer, particularly for young people; for example, recent evidence indicates the importance of internet communication for 14- to 21-year-olds and estimates that they spend an average of eight hours a week online (*Guardian*, 7.10.05). It appears that about a third of this time is used for study and research, with a widening range of technologies available to support both educational and leisure activities (*ibid.*). The education community has attempted to keep pace with these developments, and to support

... methods of learning appropriate to this new world, emphasising problem-solving and the application of knowledge, flexibility, creativity and the ability to continue learning after schooling. (McCormick, 1999)

Information technologies provide a rich resource through which these desirable innovations might be made.

The ADM- HEA project into distributed e-learning aims to reflect the different dimensions in which innovation occurs. It involves a national survey, in-depth case studies into innovation/development activities and smaller-scale case studies that will also employ focus group research. The innovation/development projects case will focus on the actualities of teaching and learning, as conducted within the classrooms, studios, technology suites, workshops and other sites in which knowledge is built in art, design and media. The courses, programmes and settings of the creative institutions that provide contexts for this learning are also an important consideration. The research aims to be context-sensitive and to provide reliable accounts of the experiences of those directly experiencing educational and technological change. Above all, it aims to find out how, why and where e-learning is used as an educational resource and to determine users' views of its value and potential.

Formulating a research proposal

In identifying appropriate activities on which to base the research, please bear in mind that they should offer insights into:

- the potential of e-learning to enhance the art, design and media environments in which learning and teaching takes place
- how innovative e-learning can be integrated into existing learning and teaching contexts
- the kinds of subject content and knowledge best supported and delivered through e-media
- the impact of e-learning on the reflective capacity that is a key dimension of understanding in art, design and media

- the range of technologies available, the use made of these and what this suggests about e-learning needs and developments

Those undertaking innovation/development projects are asked to provide a **written proposal** that provides a concise statement about your proposed activity. This should be brief, no more than one A4 side in length, and should include information on:

- Specific context and aims of the activity to be undertaken. Please indicate the timescales you expect to work to and note that it is anticipated that the activity will be of approximately 3 months duration, with reporting to ADM-HEA concluded by 5th May, 2006. February – April 2006 is therefore an appropriate period in which to undertake the activity.
- A budget outline for the activity (enabling you to claim up to £5000 in support costs). Please note any value added that is expected to accrue and also note the contribution that your home institution will make to support the activity.
- A statement about your capacity to deliver the research, for example by referring to former experience in managing/delivering this kind of project or discussing your implementation plan.
- Potential benefits you expect to accrue to the wider community, and the means by which results will be circulated within existing dissemination networks. Please suggest ways in which you are prepared to contribute to ADM-HEA dissemination activities (e.g. in professional forums, debates, presentations).

The research activity – getting started

Writing your proposal is a good way to start off the process, as it enables you to focus on both the theoretical aims and practical issues involved in carrying out the research activity. Following on from this, it is advisable to produce a clear brief for participants in the project, and you may find it useful to engage students and colleagues in the design and evaluation of the activity.

However you devise the brief, please ensure that the activities it outlines have the capability to contribute information and insights that relate to the main research aims of the distributed e-learning project, as outlined above. Your brief should also give those involved a clear outline of the activities they will be engaged in, practical information about implementation and about the amount of time you expect them to contribute. You need to consider your own time as well and be realistic about what can be achieved within the constraints of a real-life learning and teaching situation.

For more information on how you might conduct your case study research and on the implications of case study as a research method, see the 'Methodology' section below.

Writing your report

Your report should be between 5000 and 7000 words in length, divided into a number of sections. There are aspects that you will probably want to consider under each heading and a format for reporting is therefore suggested, as follows:

Executive summary

- A very brief resume of what was attempted, what was found out and an outline of the main recommendations and conclusions (the executive summary is often referred to as a 'snapshot' of the main document).

Introduction and context of the research (only enough for the reader to make sense of what follows)

- What was the project you undertook about?
- Where and when it was undertaken, with a brief description of the circumstances/context.

Research methods employed (concise but necessary information – keep this brief)

- How many respondents there were
- How you collected information (e.g. interviews, observations, questionnaire, research diary entries, focus group sessions etc.)
- How you analysed the information (e.g. you may have found themes that you brought out as headings to explain the findings; you may have arranged your findings according to the different groups of respondents – e.g. tutors' views, students' views etc.)
- Specific reporting on any difficulties you encountered or any problems that affected the project

Findings (this should be the main section of the report, and the lengthiest)

- What you found out from the data you collected
- How you interpreted this – what meanings have you derived from the information you gained?

Conclusions, recommendations and advice to others (second in significance after 'Findings')

- Overall, what do you think the most important aspects are that have emerged?
- Are there any conclusions that can feed back into quality enhancement in your institutional context, and are there ways in which students can be involved in this enhancement?
- Do you have any recommendations or advice to others to put forward on the issue of e-learning, based on your experience?

References

It is common practice in educational research projects to conduct a review of literature relevant to your topic. You are not being asked to do so on this occasion, as you are contributing to a larger body of research in which this aspect is already likely to be covered. However, if you have read anything that adds to the understanding of your project and want to include it, please do so and provide a bibliography after your conclusion, as is provided for citations made in this document.

Methodology

This section aims to provide information about ways of undertaking the research activity, and resources for those involved. The innovation/development projects aim to gain information about the empirical experience of respondents who are engaged in or involved in supporting a specific e-learning activity. We therefore recommend a case study approach as an appropriate means of conducting investigation into 'real-life' situations.

What is case study?

Case study is a qualitative research method. Qualitative research adopts an interpretive approach, studying phenomena in their natural settings and attempting to make sense of them in terms of the meanings that they hold for those involved (Denzin, 1994). Case study offers one method for qualitative research, and involves an empirical inquiry which is conducted within set boundaries of location and time. It occurs as nearly as possible in natural contexts, explores significant features of the case and attempts to create plausible interpretations of findings (Bassey, 2003). In addition, evaluative case study involves conducting these inquiries to determine how worthwhile an activity is and to convey this to interested audiences.

The aim of the innovation/development research is to understand and assess the potential of e-learning as an aspect of educational experience within the art, design and media fields, and therefore it has a strong evaluative element. Evaluative case study research can be very tightly structured, for example in examining the extent to which a programme's stated objectives have been achieved. Alternatively, it may be broadly interpretive, or illuminative. The aims of illuminative evaluation are described as follows –

... to study the innovatory programme, how it operates; how it is influenced by the various ... situations in which it is applied; what those directly concerned regard as its advantages and disadvantages; and how students' intellectual tasks and academic experiences are most affected.

(Parlett and Hamilton, 1977, p. 10)

- the emphasis on innovatory activities suggests that this stance is appropriate to our current inquiry.

What kinds of outcomes can we expect from case study?

It is expected that each case will be 'individual', so potentially diverse outcomes can be anticipated. There may be opportunities, however, to draw more general inferences from the body of findings that will be accumulated when all the case reports are available.

Generalization from case study findings is recognized to be difficult, and the issue has been the subject of debate for a long time (see Yin, 1994; Stake, 1995). There now appears to be an acceptance of the idea that individual case studies should be able to contribute to 'cumulative knowledge' or the development of 'theoretical insight' (Atkinson and Delamont, 1985). However, this depends on ensuring that best practice is adopted in research methodology, data collection, handling and analysis. At its best, reliable case study research can reveal understandings that are both unique and applicable to other situations.

This project aims to create an archive of findings from the diverse research initiatives that are being sponsored, enabling us to contribute findings and conclusions that will enter the public domain at a number of levels.

Methods of inquiry

Research is a creative and flexible activity, but also one that repays systematic procedures. There are a number of recognized stages in the process:

- Identification of an issue to investigate
 - Drawing up of specific research questions and ethical guidelines to govern the research
 - Deciding on which people, contexts, settings and situations are likely to be able to provide information.
 - Drawing up a plan to gain this information and deciding the best methods of collecting it
 - Collecting and storing data, establishing systematic ways of recording the information.
- Case study research, which is a qualitative method, often uses these ways of getting information on a topic –

Interviews - involving tape or video recording, note-taking, paraphrasing and making shortened reports of the tapes (full transcription is an option, but is very time consuming)
Observations – making field-notes that record aspects of a situation you are interested in; using audio or video recordings.

Questionnaires – If you are going in for this decide whether you are asking open-ended or closed (i.e. yes or no) questions; think about whether all the respondents you are involving will have the information to provide you with answers; try to read something on questionnaire design if this is unfamiliar to you; pilot it on 'critical friends'

Research/project diary – this helps to keep you (and the project) on track. You can use it to keep contact details, everyday information about times/places of meetings etc. as well as speculations, impressions and ideas that might be important.

Ethics

Ethical considerations are important in all research undertakings. The best guidelines to follow are those issued by the British Educational Research Association (BERA). However, most books on educational research have a chapter on ethics. Further guidelines can be issued for the project on request.

Data analysis

One of the most frequently used strategies for analysing qualitative data of the type generated in case study research is 'thematic analysis'. This involves sifting through the material that has been collected, looking out for correspondences or similarities across different parts of the

data and placing 'like with like'. You can do this electronically by 'cutting and pasting', or do it manually. Some researchers still like to see different piles of paper accumulating on the floor, others like to use coloured pens and so on. The idea is that you begin to assign your material to a number of categories that seem appropriate.

Once you have established some categories of data in this way, you can begin to think about naming them and are likely to recognize themes that stretch across different data items. It is likely that this process of generating descriptive categories or themes is the one that will be most useful to those working on this project. These themes will therefore act as a significant focus in your reporting of the project.

The method of reporting that is outlined above provides a good fit with case study method, and you should be able to include the findings and insights that you gain within the rubric suggested.

References

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Appendix 2: Distributed e-learning in Art, Design and Media Phase 3 research

Questions and protocols for focus group facilitation

The **questioning route** in focus group research: easy beginning, then the sequence moves from general to specific. This is a 90-minute (one and a half hour) session.

Opening questions - get people talking and make them comfortable

'Could you tell us who you are and about your favourite gadget?' (5 mins)

Introductory questions - introduce the topic of discussion and get people to start thinking about their connection with the topic

'What's the first thing that comes to mind when you hear the term 'e-learning'?' (10 mins)

Transition questions – these ask participants to go into more depth about their experiences, making the connection between them and the topic of investigation.

'What do you use computers for?' (10 mins)

This is going to be a listing response. They get 3 minutes to list, then we can compare responses and finally we will ask them to say which is most important on their list and which is least important (provide stickers to put on their lists against most important, least important – we will put onto them a smiley face or scowly face).

Key questions (based on the central research questions) (45 mins)

Firstly, to describe current use: good and bad experiences

‘Think back to a good experience of using IT/computers for your work. Could you describe what happened for me?’ (15 mins)

‘Now think back to something you wanted to use computers for and it didn’t work out, and tell me what happened.’ (15 mins)

Secondly, to evolve solutions to problems. We will provide them with a picture of a closed-up box, and ask them to address the following. They can draw or write on the paper and then tell us about what’s in their box.

‘This magic box holds the answers to all your problems and difficulties with computing and IT. What’s in the box?’ (15 mins)

(Should also have a spare question if they run out of steam – i.e. Futures – what can computing/IT do for you in 10 years time)

Ending questions: 3 types that work sequentially **(20 minutes for all 3)**

‘All-things considered’ question - asks each participant to determine their final position on critical areas of concern – e.g.

‘Of all the aspects of e-learning we discussed, which one is the most important to you?’ (5 minutes)

Summary question – moderator gives short oral summary of discussion that was evoked by the key questions, then asks

‘How well does that sum up what was said here?’ (5 minutes)

Final question – an insurance question **(give at least 10 minutes to this)**

‘Have we missed anything out? Is there anything we should have talked about and haven’t?’